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MONTHLY REPORT

OF

THE AGRICULTURAL DEPARTMENT.

NOVEMBER AND DECEMBER,

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MONTHLY REPORT.

DEPARTMENT OF AGRICULTURE,
Washington, D. C., December 26, 1866.

In the present report for the months of November and December will be found a variety of interesting and important matter. Facts and suggestions concerning southern industry and resources will command the attention of political economists and business men of all sections of the country. However the political questions affecting the rehabilitation of this section may be settled, it is plainly the interest of every inhabitant of this broad land to utilize the hidden wealth and latent power of the fields and streams, mines and forests of half a continent. I am particularly anxious to do all in my power to secure the renovation of the worn and abandoned soils of that section of our agricultural domain. The work of the chemical laboratory, and its promised results, are indicated in a brief article. It is believed that much may be accomplished for the progress of agriculture by this instrumentality. A continuation of the history of cotton insects, by the entomologist, will excite attention, it is hoped, to renewed scientific and practical efforts to lessen the enormous losses to agriculture from insect depredations. One per cent. upon the cash value of cotton destroyed by insects the present year would far more than suffice to pay salaries to an entomologist and several assistants in every State in the Union. To be sure, such a corps of scientific men could not point out the means of totally preventing such ravages, but if the science of entomology is not an utter failure and deception, here is a field for improvement that might be occupied with eminent success.

Interesting statistics from foreign official sources, and from United States consuls in foreign lands, will be found to comprise new and valuable additions to the popular stock of statistical knowledge.

A final summary for the year is given of various farm crops, and, in particular, full and careful estimates of the products of corn and cotton.

In the next report will appear a full statement of the prices of the various kinds of agricultural labor in the several States and Territories, which will furnish material for study to the political economist and business men of this and European countries.

I. NEWTON,
Commissioner.

SOUTHERN INDUSTRY.

The natural resources of the South have never been developed. A small portion of the soil, and much of that portion actually among the poorer lands, has been brought under the plough, depleted by a wasteful system of culture, and either left to broom-sedge or pines, or cropped still at a great expenditure of labor for small returns. Some of it is too rich to be exhausted by surface working, and is still very productive. Even that which is abandoned is not exhausted; the culture received never went deep enough for that. But by far the greater portion of the richest and best lands that the South ever possessed is yet in primitive forest, awaiting the axe and the plough.

The mineral resources of this region are comparatively unknown. The whole Alleghany range is rich in iron, coal, gold, silver, lead, and many other minerals, with a great variety of earths valuable in the useful arts, petroleum, and the richest saline waters. These mines of wealth will not long remain hidden. What is true of a section of the original "Old Dominion," in the following extract, is becoming true of the entire mountain region of the south:

"The capitalist has discovered, with keen vision, the abundant coal, iron, petroleum, and other wealth thus hidden, *and the central location of the lands containing them*; he has planted his money in these hills, and has determined to reap a golden harvest. Present facilities for developing these resources will be improved and new ones created. New lines of railroads are already projected, and will be built, and the navigation of all rivers that are at any time navigable will be perfected."—*(Dodge's West Virginia.)*

The manufacturing facilities of the South are scarcely to be surpassed anywhere. Already it is understood that this interest, next to agriculture, is to become the most important in that section, and enterprises numerous, extensive, and various in character, are initiated and in progress.

It is beginning to be seen that a subdivision of farms and the better cultivation of improved lands, and a larger expenditure of capital in labor-saving implements, will result in greater personal and general wealth, and a higher degree of intelligence and culture.

The following paragraphs of the report of the Commissioner of Agriculture to the President, for the current year, are in point:

"In the reorganization of industry in these States it is believed that the great mistake of the past, the concentration of labor mainly upon a single branch of a single grand division of productive industry, will be avoided. This mistake has cost that section one-half the wealth it might have attained, and may have led to the sacrifice in war of a portion of the remainder. Excessive increase of a single product, tending to over-supply and reduction of price, and attended with heavy expenses for outward freights, and the purchase of all farm and family supplies burdened with cost of carriage and a long line of consuming commissions, points unerringly the way to national poverty and individual bankruptcy. A proper equilibrium of the products of industry, saving untold burdens of freightage, excessive profits and extortions of middle-men, insurance, breakage, and manifold losses, prevents reduction of prices from burdened markets, lightens damages from failures of single products, gives employment to all classes, conditions, and capacities of labor, insures remunerative wages for the workmen, renders possible necessary rotations and the production of farm manures, and increases the wealth, intelligence, and power of a State. In political economy the smaller products of a diversified industry are far more than an equivalent for a single result of organized labor, however absorbing or important. The cotton crop, for example, of the empire State of the South, in 1860, was 701,840 bales, yielding little more than $30,000,000, while the butter of New York in 1865, one of several products of the dairy, was estimated at

$60,000,000; and yet the census gives to New York but 370,914 farmers and farm laborers, and to Georgia, including white farmers and farm laborers, and only the males of the slaves, 316,478 persons engaged in agriculture. Besides the other dairy products, milk, cream, and cheese, and the multitude of smaller products of the farm, the principal crops make an astounding aggregate—as in 1864, when the corn crop of New York was estimated at $38,000,000, the wheat at $25,000,000, the oats at $33,000,000, potatoes at $19,000,000, and hay at $90,000,000. Including the minor cereals, products of orchards and gardens, the production of beef and mutton from pasturage, and a great variety of miscellaneous and exceptional products, the currency value of the agricultural productions of this one State in that year was far greater than the money returns of any cotton crop ever produced in the country, and the gold value of such products would be more than equivalent to the gold value of half the cotton crop of 1860.

"It is evident that the diversification of farm industry, which secures these results in one location, must be applied to reorganized southern agriculture, with modifications such as climate and soil may indicate; and while cotton, as is hoped and believed, will ever be a prominent crop, and a sure reliance for immediate cash returns, it will never again overshadow and dwarf other interests essential to permanent success in agriculture. And it is also equally apparent that a portion of the labor of these States will eventually be diverted from agriculture and expended upon other departments of industry, especially manufactures; and that the day is not far distant when a portion of this cotton will be exported from the States in which it is grown in the form of yarns and coarse fabrics of various grades and styles. And such a day will bring surer prosperity and more abundant wealth than ever blessed those States in the past."

THE TIDE-WATER REGION OF VIRGINIA.

The "Old Dominion" had four distinct divisions of surface and soil, known as the "Tide-water," "Piedmont," "Great Valley," and what is now known as the State of West Virginia, though the State lines embrace a few counties in the lower or northern portion of the valley.

The former extends from the coast to the head of tide-water, or the lower falls of the several rivers entering the Chesapeake, including the cities of Fredericksburg and Richmond. Two counties, Accomac and Southampton, are a thin strip of level sandy soil, seventy-eight miles long and ten wide, lying between the Chesapeake bay and the Atlantic ocean.

The whole region is intersected by broad and deep navigable waters—bays, estuaries, and rivers—making a coast line of fifteen hundred miles. These waters are alive with fish, in great variety and excellent quality. The shad fisheries of the Potomac and other rivers are lucrative. A fine, fat herring is caught and cured in prodigious quantities, and constitutes an important and favorite, as well as cheap, item of food for the people of Maryland and Virginia, and of other States to a considerable extent. The distant West makes large demands upon the Potomac fisheries. The oysters of the lower waters towards the sea are famous for quality, size, and fatness, and supply a trade amounting to millions yearly, and extending north and west and to the territories of the Rocky mountains.

The soil is of diluvial formation, in many places underlaid with marl. Some of the bottom lands are of great fertility; the uplands a sandy loam, sometimes modified by clay, and occasionally of a gravelly character. For peaches and other fruits and for gardening it is remarkably well adapted, and is easily and cheaply fertilized by oyster-shell lime, marl, and grasses brought up by the tide.

The vicinity of Norfolk affords an illustration of the whole region as to its adaptedness to fruits and vegetables, showing a valuation of market-gardening products in 1860 of $292,968 in one county.

Forests of pine and oak, interspersed with hickory, ash, and other varieties of trees, afford lumber and wood for various arts and for fuel, within easy transportation of the great markets of the country. In the thirty-eight counties of this district are no less than three millions of acres of unimproved lands, occupied by rapidly-growing forest trees—more than half the area of all its farm lands. The cash value of its farm lands in 1860, at the low official assessment, was $77,906,005, an average of $13 64 per acre. This is about half the average assessed valuation of the farm lands of Ohio, while their intrinsic value, from their peculiarly favorable and central location and means of cheap fertilization, is fully equal to that of the lands of Ohio. The following are some of the farm statistics of this region:

Statistics of the tide-water region of Virginia, from data furnished by the United States census of 1860.

Counties.	Acres of land.		No. of farms.	No. of farms over 500 acres.	Average acres per farm.	Cash value of farms.
	Improved in farms.	Unimproved in farms.				
Accomac	84,889	81,762	1,033	10	161	$3,979,720 00
Alexandria	8,291	6,969	138	1	110	853,260 00
Charles City	50,267	48,190	199	20	494	1,239,410 00
Caroline	183,799	122,123	724	102	422	4,407,613 00
Chesterfield	106,999	154,973	782	42	335	3,263,370 00
Dinwiddie	118,440	169,086	581	50	494	2,643,250 00
Elizabeth City	17,534	13,905	156	5	201	1,273,050 00
Essex	96,415	60,707	418	57	375	2,439,173 00
Fairfax	84,690	115,916	852	12	235	3,866,075 00
Gloucester	58,708	53,418	384	22	292	2,001,234 00
Greenville	70,317	97,648	201	42	835	982,900 00
Hanover	141,205	218,120	786	66	457	4,203,120 00
Henrico	69,220	66,490	670	22	202	5,128,610 00
Isle of Wight	64,755	110,563	689	12	254	1,531,290 00
James City	25,003	52,715	149	7	521	1,011,340 00
King George	70,753	42,743	327	42	347	1,933,469 00
King and Queen	108,107	76,925	573	55	322	2,454,708 00
King William	99,674	64,239	544	41	301	2,568,250 00
Lancaster	34,925	33,742	326	6	225	1,307,441 00
Matthews	29,594	19,838	400	6	123	1,450,460 00
Middlesex	36,624	31,655	243	15	281	1,145,060 00
Nansemond	59,708	112,750	673	3	256	1,680,210 00
New Kent	46,310	66,965	330	13	343	1,331,275 00
Norfolk	47,985	81,794	666	4	194	2,140,252 00
Northampton	56,402	49,065	402	4	262	2,184,250 00
Northumberland	54,459	53,390	468	18	230	1,701,047 00
Prince George	63,777	83,809	351	19	420	1,947,415 00
Prince William	97,353	76,746	581	32	299	2,373,100 00
Princess Anne	57,612	75,140	755	2	175	1,860,486 00
Richmond	52,094	43,630	406	3	235	1,270,037 00
Southampton	131,963	163,708	639	59	470	1,615,065 00
Spottsylvania	116,007	117,059	602	57	387	2,394,424 00
Stafford	62,377	63,960	476	12	265	1,536,580 00
Surry	50,306	123,922	439	20	396	1,082,056 00
Sussex	126,088	134,426	562	72	463	1,601,905 00
Warwick	12,093	25,144	99	3	376	406,250 00
Westmoreland	76,100	55,415	379	42	347	1,931,680 00
York	28,030	39,697	311	8	217	1,167,320 00
Total	2,698,873	3,009,347	18,312	1,006	.....	77,906,005 00

THE EASTERN SHORE OF LAKE MICHIGAN.

The lake regions of the United States are becoming yearly more prominent in wine and fruit production. Their climatic superiority for such culture has long been manifest to scientific observers, and is now becoming successfully tested in practice. The following paragraphs relative to a section of the eastern shore of Lake Michigan are from a communication from Henry S. Clubb, secretary of the Grand Haven Horticultural Association:

The general character of the eastern shore of Lake Michigan, for from six to ten miles east of the lake, is sandy, and close to the lake the white sand is whirled into the most fantastic shapes by the lake storms, in some cases forming hills almost as white as snow, and running from two to four hundred feet above the level of the lake. These hills are partially covered with forest trees, consisting of pine, hemlock, beech, maple, and oak, with a small growth of cedar, and in the valleys black oak is occasionally to be found.

Most of these hills are full of roots (apparently growing from the solid ground beneath) of a wild grape-vine, which sometimes produces a small black grape, of no particular value where cultivated varieties can be obtained. The highest hills have a strong growth of these vines at their summits, and consequently the roots must in some cases be from 200 to 400 feet in length, keeping pace in their growth with the white sand on the hill.

Back from the sand-hills are numerous small lakes, or bayous, varying from one to six miles in extent, around which are sloping banks of sand, with here and there a substratum of white marl. In some of the small valleys there is an occasional swamp of black soil. This, however, is a scarce article in this sandy region, and such spots are held at high prices, being adapted for market-gardening or meadow-land. Around the small lakes, on the sloping banks, and on the table-land of only moderate elevation, the peach and the grape appear to have found their natural position, and lands which a few years ago would not sell at five dollars an acre now command from ten to fifty dollars per acre, and in close proximity to shipping ports much higher rates.

Corn is seldom grown here in large quantities, and neither wheat nor grass can be obtained, except on the rare spots above mentioned, in sufficient quantities to make their cultivation profitable. Rye and buckwheat are more successful.

The growth of peaches along this shore was, we believe, commenced at St. Joseph, Berrien county, about fifteen years ago, and the success of the experiment there has been the means of extending the peach culture along the lake shore as far as Manistee, and experience has shown that in some seasons, when St. Joseph fails to obtain a crop, the more northern localities succeed beyond all expectation. The season just past has shown this in a remarkable degree, and the theory explaining it is that while St. Joseph is so located that the prevailing wind, the southwest, only passes over a small portion of the lake, and that portion frozen, the wind from the same direction at Grand Haven, and north of here, sweeps over the surface of the unfrozen lake for a distance of one hundred miles, and is thus modified in its temperature. Our meteorological friends here record, in the severest winters, several degrees in favor of Grand Haven over the temperature of St. Joseph.

The Lake Shore Horticultural Association held an exhibition or fair last month, and to show what kinds of fruits are the most successful in this locality a brief report of the awards of the committee on fruits is given below.

Apples.—The premium for the largest variety of apples was taken by Judge Hathaway, of Nunica, a village east of the sandy lake shore region, so that this

locality will not claim any pre-eminence in the production of this fruit, although some fine apples were exhibited by our lake-shore growers.

Grapes.—The premium for the best pound of grapes was awarded to John W. Cook, esq., of Grand Haven, to whom belongs the credit of being the pioneer in fruit growing in this vicinity, which may be regarded as the centre of lake-shore fruit culture. Mr. Cook has not only proved the adaptability of this locality for peaches, but also for grapes. To the Delaware was awarded the first premium, the only grape which at that period, October 3, could claim to be agreeably ripe. September was this year unusually wet, and had the fair been held the latter end of the month instead of the beginning, grapes would have exhibited to much greater advantage, although it would have been too late for peaches. A bunch of the Hartford Prolific, exhibited by J. V. Hopkins, esq., of Mill Point, would have taken the second premium but for the lack of the requisite quantity; as it was, the premium was awarded to Hunter Savidge, esq., for a fine box of Concord. The Isabella, exhibited by the same amateur, was nearly equal to the Concord. The Catawba should be placed last on the list of grapes adapted to this locality.

The exhibition may be said to have placed the old established grapes for this section in the following order, the earliest being placed first: The Delaware, Hartford Prolific, Concord, Isabella, Clinton, Catawba. The most recent varieties, Iona, Israella, Diana, &c., not being on exhibition, cannot be said to have been fully tested in this locality. We have, however, seen at Mr. Cook's residence, in Grand Haven, a very fine specimen of the Diana, which shows that it is a good grape here, although its relative earliness will not, we think, place it higher in the list than the Concord or Isabella.

The premium for the best exhibition of grapes was awarded to Hunter Savidge, who, we believe, exhibited all the varieties in the above list. This gentleman, in connection with his partner, Dwight Cutler, esq., of Grand Haven, has a vineyard of about three-fourths of an acre on the south shore of Spring lake, with a decided inclination towards the north, and a blind fence on the west. For perfect neatness and trim we have never seen the equal of this model vineyard. Its trellises run north and south, and are about seven and a half feet in height. Not a blade of grass or a weed of any kind is visible among the vines, and the whole is raked as even as a newly made seed-bed. The production of this little vineyard four years after planting was about $800 worth of grapes—one year ago. The yield this year has been fully equal in quantity, we believe, although the price is probably less, in consequence of the prevalence of the cholera in Chicago, the best market for this region of country.

There are numerous other vineyards in different stages of growth, and in another year the competition among lake-shore grape-growers will become quite sharp and interesting. Considerable tracts of land are being cleared for vineyards, and the eastern shore of Lake Michigan bids fair to rival, in a few years, the famous southern shore of Lake Erie. Grape-growers from Ohio have visited this locality and expressed the opinion that it is preferable to their own section, in consequence of the superior protection on the north side, which is furnished by a dense growth of evergreen timber. The fact that Lake Michigan never wholly freezes over, and that the prevailing winds are southwest, west, and northwest, gives this locality a decided advantage for grape culture.

Peaches.—The premiums for the best exhibition of peaches were taken by Mr. Lovell and Mr. Eames, the former of Mill Point, and the latter of Ferrysburg, a village on the opposite side of Spring lake. The early and late Crawfords and the Stump the World could not be excelled by anything we have ever seen from North Carolina, Delaware, or New Jersey, in the New York markets.

The shores of this little inland lake are becoming the favorite resort of fruit-growers. Peaches and grapes appear to grow here with equal success and profit. The peach orchard of Mr. Lovell is a model of its kind. It contains

about thirty acres, running parallel with and alongside of the Detroit and Milwaukee railroad. When this beautiful crop was on the trees this year, we understand Mr. Lovell was offered $25,000 for the orchard, and that sum was refused. This orchard is on land which ten years ago was covered with a scrubby growth of oak and did not appear worth clearing; yet, we understand, but little manure has been applied. The trees are kept trimmed and free from worms, and the ground loosened by cultivation.

Mr. Reed, of Mill Point, exhibited a fine seedling which resembled the Crawford's Early, but which appeared sweeter to the taste and fully equal in size. It was named Reed's Imperial by the committee on miscellaneous productions. Several seedlings of fine quality were also exhibited by Mr. Eames, who had the largest variety of peaches on exhibition.

One of the finest, and, we believe, the oldest, orchards in this vicinity is that of Mr. Hezekiah Smith, situated on an arm of Spring lake, known as Smith's bayou. There are over twenty acres of apples and peaches. Mr. Smith has taken the premium several times at the county fair for the best peaches; this year the exhibition occurred between the perfection of his Early and Late Crawfords, being too late for the former and too early for the latter. We visited the orchard, and must say we have seldom witnessed trees in better condition. Mr. Smith being of African descent, only adds to the testimony so rapidly accumulating in late years of the ability of his race for attaining a high degree of civilization and refinement.

The method of packing grapes and peaches generally adopted here is to pack the former in boxes of half-inch planed pine board, containing about ten pounds to the box, while the peaches are placed in crates made of rough lath and holding about half a bushel.

The wages paid during the gathering and packing season were, for women, one dollar per day.

The prices realized this year for grapes were from 12½ cents to 25 cents per pound, and for peaches from 50 cents to $3 per crate—the former price for common seedlings, and the latter for the best Crawfords.

EGYPTIAN COTTON.

The common green-seed or upland cotton of the United States is undoubtedly superior to varieties from any other portion of the world, for the climate and soils in which it is grown; but there is a part of Texas where black-seed cottons of an intermediate type between the upland and sea-island are already grown to great advantage, and where experiments in the introduction of seed from other countries might be made with more than a possibility of remunerating success. Already three-fourths of the cotton of Florida is of black-seed varieties, of which the real sea-island constitutes but a very small proportion, raised by a score or more of planters. It may be, therefore, that the importation of Egyptian seed will prove of advantage to the country, despite the flippancy of overwise journalists. The following communication is from Edward Atkinson, esq., of Boston:

BOSTON, *November* 29, 1866.

SIR: I am informed that you have caused to be imported a considerable supply of the seed of the variety of cotton grown in Egypt, in accordance with a suggestion made by me some months since. I was induced to make this suggestion from the fact that notwithstanding the great increase in the production of Egyptian cotton, the price has rapidly advanced in comparison with our best New Orleans or Texas staple. Before the late war the crop of Egyptian cotton

was somewhat less than 150,000 bales, of 550 pounds each; in 1864–'65 the crop amounted to 440,000 bales, of 500 pounds each; in 1865–'66 the crop was reduced one-third to one-half by a very bad season and a murrain among the cattle; but the crop of 1866–'67, now coming to market, is estimated at from 500,000 to 600,000 bales. Yet, notwithstanding the increased supply, the price is now relatively much higher than that of New Orleans or Texas cotton, with which it used to keep about even, and sometimes sold for less. On the 20th of September last, the quotations in Liverpool for middling to middling fair New Orleans and Texas cotton were 14 to 16 pence, (28 to 32 cents in gold,) while the corresponding grades of Egyptian, called good fair to good, were 20½ to 22½ pence, (41 to 45 cents in gold,) and the fine quality, corresponding to our fair, was quoted at 26 pence, or 52 cents in gold.

The reason for this change in relative value is that during the scarcity of American cotton much attention has been given to the proper adaptation of machinery to other staples, and that during the last two years, the patent having expired upon the best combing machine yet invented abroad for combing worsted, its price has been reduced from £700 to £200 or less, and it has been adapted to the combing of cottons of the type of Egyptian and Brazilian, and also to combing our New Orleans and Texas cottons.

In this country a new comber has lately been invented or perfected for the same purpose, which is said to be cheaper and more effective than the best foreign machine.

It may here be stated, for the information of those not familiar with the subject, that worsted is simply wool from which the short fibre has been removed by combing; the residue or long fibre, being of almost absolutely uniform length, is of course capable of being spun into a much stronger and more even thread than can be spun from carded wool—the wools usually subjected to this process being those which have a lustre like those produced by the Cotswold and Leicester breeds of sheep.

The process of combing when applied to cotton removes all the short fibre which the common card would leave. The short fibre is used for the filling or weft of common fabric, and the long fibre, which in Egyptian cotton will range from one and one-fourth to two inches in length, is used for the spinning of thread and of warps, and for very fine fabrics. It is alleged that a single thread made from combed cotton is stronger than a double thread of the same size made from carded cotton. The cheapness and good quality of the warps thus made have greatly extended their use, and the fact is beginning to be appreciated that many flannels, worsted fabrics, broadcloths, &c., made from a cotton warp and wool filling are much better and more serviceable than goods of the same weight composed entirely of wool or worsted.

Having thus demonstrated the value of the Egyptian staple, it remains to be considered what this country should do in securing to itself the power to supply this or a similar variety, coming in as it does between our New Orleans green-seed and our sea-island, or black seed. I have therefore compiled such information upon the subject as I believe may be valuable, which must be taken for what it is worth, as I have never even seen a cotton field, and have no knowledge except such as I have derived from books.

Cotton, or the variety called Belledi, is indigenous in Egypt, but the variety now cultivated, called Tumel Maki, was first discovered by a Frenchman named Tumel, in 1819, growing in the garden of Maho Bey, in Cairo. Maho Bey had been the governor of Dongola or Sennaar, whence he is supposed to have brought the seed.

It is a black-seed variety, producing a staple from one to two inches in length, very strong, but not so fine as our sea-island variety. The fibre does not adhere to the seed, and it is easily ginned upon the Macarthy gin. The plant is much larger and more prolific than the sea-island, but whether it is more hardy or

not has yet to be proved. Mr. Joseph Gibbs, a most intelligent writer upon the subject,* states the yield to be, under Arab cultivation, nearly equal to that of American plantations, acre by acre, and this comparison is with our green-seed, not our sea-island plantations. And what Arab cultivation was may be inferred from the following statements: "At present all the cultivation is similar to that practiced in the time of the Pharaohs, except upon the model farms belonging to the Pacha. It may be said that in Egypt there are no ploughs, properly so understood, except such as were used in the time of the Pharaohs, and which consist of a great beam of wood with one upright handle, and a wooden shoe to tear up the ground, which is only done in alternate furrows, leaving one-half altogether unploughed." If such a crop—that is, a crop equal in quantity to ours, acre per acre—could be produced in 1862 by such cultivation, it will be well worth while to make the experiment with this seed upon our bottom lands, and with better methods. Although a black-seed variety, and similar in many respects to our sea-island, it does not seem to require, like that, the saline manures or the conditions of climate found upon our coast islands. On the contrary, some of the very best cotton is raised upon plantations in Upper Egypt cultivated by irrigation.

Since Mr. Gibbs wrote upon the subject a great improvement has taken place in the cultivation, partly under the direction of the Pacha, who is, probably, the largest and most successful cultivator of cotton in the world, but to a greater extent from the introduction of a large amount of European capital, the use of steam-ploughing, and of better methods of irrigation.

In a report made in 1863 by Mr. Wm. S. Thayer, our former consul, I find the method of cultivation stated as follows:

"In planting, the method found by experience to be the best is to sow the cotton every year and to rotate the crops. The ploughing begins very early in the spring; about the middle of March the land is irrigated, and after it becomes sufficiently dry it is tilled, and sown early in May. On some estates the land is tilled four times before and four times after irrigation; the plants are watered as many as four times during their growth, and are weeded every thirty days. As a rule, but not invariably, manure is not used, the Nile being the sole fertilizer. Three cantars (the cantar is $100\frac{8}{10}$ pounds) are a fair average yield per acre, but sometimes six, seven, and even eight are attained."

This statement gives product of clean cotton.

In 1841 the average net income of an Arab laborer was about two and a half pence, or five cents per diem; but owing to the great stimulus arising from the increased price of cotton, wages have risen, and, as nearly as I can ascertain from Mr. Thayer's statements, amounted in 1863 to twenty to twenty-five cents per day in gold.

Mr. Thayer gives a statement of the cost of raising cotton as follows:

"I subjoin here what I have reason to believe a statement of the exact cost of cultivating a single acre with cotton. It is furnished me by a successful planter at Mansanah, in Lower Egypt, but the items are upon a scale of expense considerably larger than is necessary in some of the other districts:

Land tax, or rent paid to government	110	piastres.
Ploughing	50	"
Irrigation	60	"
Seed	20	"
Hoeing	100	"
Picking	100	"
Ginning	40	"
	480	

* Cotton Cultivation, by Joseph Gibbs. London, 1862.

equal to twenty-four dollars in gold. As an acre of land in Mansanah yields an average of four cantars, about 400 pounds, the expense of raising one cantar, according to the foregoing statement, will amount to six dollars, or six cents per pound."

The question whether Egyptian cotton will maintain its quality and its full product per acre when cultivated in this country, can only be decided by actual trial. It depends upon many conditions other than the chemical constituents of the soil, but these may be some guide. As is well known, the fibre of the cotton plant contains a very small proportion of inorganic matter derived from the soil, say about 10 pounds to a bale of 450 or 500 pounds; the removal of the fibre is therefore of little consequence, and is not exhaustive. The seed, however, which in Egypt bears about the same proportion to the fibre as in this country, viz., about three to one, draws very largely upon the soil, the chemical ingredients supplied from the soil being about four per cent. of the weight in this country, and I suppose elsewhere, consisting mainly of phosphate of lime and phosphate of potassa. Thus, for every 500 pounds of cotton fibre there are 1,500 pounds of seed, and four per cent., or 60 pounds of the seed, consists of inorganic matter furnished by the soil; of this 60 pounds 37 are phosphate of lime, and 19 phosphate of potassa.

So far as I can find the data for comparing the chemical constituents of the soil, our cane-brake and river bottom lands are richer in phosphates than the Nile mud.

The value of cotton seed for the production of oil and cake for feeding cattle is so well understood in Egypt as to cause it to bear a higher price per bushel than wheat, and if some action is not taken for utilizing the seed of cotton raised upon our uplands in a better manner than heretofore, it is quite evident that upland must soon become exhausted under cotton cultivation; our bottom lands are doubtless inexhaustible.

I hope that especial pains will be taken to test the value of Egyptian cotton in Texas. The very finest specimen of cotton I have ever seen was raised from Egyptian seed upon the coast of Texas. A large portion of Western Texas has a climate more like that of Egypt than any other section of this country, being comparatively free from rain, yet possessing a fine moist soil, kept in good condition by the rivers and springs flowing from the far interior mountains.

As very many of our best varieties of green-seed cotton have been produced from seed imported from Mexico, it may be that we shall now add a valuable long-stapled, black-seed variety for cultivation in the interior by this importation from Egypt. I hope you will next year import some black seed from Brazil and from the high lands of Peru.

E. A.

Hon. Isaac Newton.

THE DEPARTMENT LABORATORY.

The chemical laboratory of this department, now in charge of Dr. Thomas Antisell, is in working order, and in order to make it more extensively useful and available for the advancement of agriculture the following outline of the nature of the objects which it is hoped to accomplish by its assistance is appended.

WORK PERFORMED IN THE LABORATORY.

The prosecution of extended and trustworthy researches in various subjects connected with agricultural chemistry, such as—

1. The determination of the food or manufacturing value of substances of

vegetable growth useful as esculents or articles of manufacture. Under this head may be classed the chemical examination of those new plants or seeds which have proved serviceable to man abroad, and which have been imported or grown for experiment in the gardens of the department.

2. The examination of certain conditions of agricultural growth which are still matters of doubt or of difference of opinion; *e. g.*, the determination of the most proper time for obtaining sugar from the sorgho plant; the most economical method of separating its sugars; the consideration of the value of the beet as a substitute for the cane or other sugar-producing plant; and the exact relation of climate, soil, and period of growth with the amount of sugar in the sap.

These examinations will generally be carried out upon plants or raw products raised by the department, which will thus act as a pioneer in recommending, after rigid investigation, to the agriculturists of the country the cultivation and introduction of new substances, products, and plants.

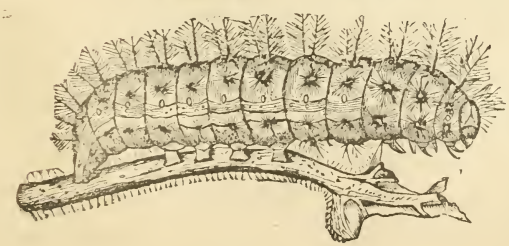
3. The examination of certain growing crops of value in all sections, with a view to determine the value of various manures at certain periods of growth of the plant. This line of investigation is now much cultivated in the agricultural laboratories of Europe, but there is ample room for similar researches in the United States.

4. The examination of any newly discovered minerals, marls, mineral waters, peat beds, or other substances which may be of importance to the agricultural community. Farmers, planters, and others can have such substances examined in the laboratory of the department upon forwarding samples. As the department was established for the benefit of the whole community, the chemical report of such investigations will be made public through the monthly or yearly reports, whenever it is believed that the information resulting from the examination will be serviceable to the interests of agriculture.

INSECTS INJURIOUS TO COTTON PLANTS.—NO. 5.

HYPERCHIRIA VARIA. *Packard Pr. Ent. Soc., Phil., vol.* 3, *p.* 384.

Saturnia io. *Harris*, 395.
Corn Emperor moth, or Io Emperor.



The foliage of the cotton-plant is also eaten by the caterpillar of a large moth. This spiny and stinging caterpillar is often found upon the leaf of cotton in September; it feeds likewise upon the blades of Indian corn, and the leaves of the willow, balsam-poplar, dogwood, and many other trees.

Whenever one of them is found in a field, the plants attacked by it may be easily distinguished by their leafless appearance in the midst of the otherwise green and flourishing vegetation, as it rarely quits a plant before it is completely denuded. Often, however, those which have lost their leaves from the rust present much the same blighted appearance; but in this case the numerous yellow, withered leaves, which are scattered on the ground, at once indicate the disease.

The thorny spines with which these caterpillars are armed have a peculiarly poisonous property, and are capable of inflicting painful and severe wounds, similar to the sting of a wasp. It is therefore necessary, if the insects require to be touched, to use a stick or branch when removing them from the plants on which they feed.

These caterpillars cannot be classed among those very injurious to cotton, as they do not appear to be sufficiently numerous to effect much damage. Very few complaints have been made about them by the planters either of Georgia or South Carolina; in the year 1855, the same caterpillar was found very abundant in the cotton-fields near Tallahassee, but the damage done by them was trifling.

Mr. Newman, of Philadelphia, who has paid much attention to the breeding of caterpillars, states that this insect is found on the willow. Dr. Harris says they are also found upon the balsam-poplar and elm in Massachusetts; and, according to Smith and Abbot, in their "Insects of Georgia," it is found on the dogwood, sassafras, and Indian corn, which are devoured by them. I have also found them on the oak and locust.

The caterpillar is from two inches and a quarter to two inches and three-quarters in length; but, as Dr. Harris has minutely described it, I will quote his own words:

"The caterpillars are of a pea-green color, with a broad brown stripe, edged below with white, on each side of the body, beginning on the fourth segment and ending at the tail. They are covered with spreading clusters of green prickles, tipped with black, and of a uniform length. Each of these clusters consists of about thirty prickles, branching from a common centre, and there are six clusters on each of the rings, except the last two, on which there are only five, and on the first four rings, on each of which there is an additional cluster low down on each side. The feet are brown, and there is a triangular brown spot on the under-side of each ring, beginning at the fourth." The brown stripe mentioned by Dr. Harris is often of a reddish-brown, and in high-colored and healthy individuals I have seen it almost of a carmine red.

The caterpillars are gregarious when young; but when older they are solitary. When fully grown, they form a brownish cocoon of a gummy substance among the leaves, resembling parchment. The perfect moth comes out the following spring. There are two broods of these insects in a season in the southern States; and I have observed the caterpillars on cotton as late as the month of September.

The chrysalis is brown, and of a short, thick form, with a number of hooked bristles on the tail.

The following is Dr. Harris's description of the moths: "They sit with their wings closed and covering the body like a low roof, the front edge of the under-wings extending a little beyond that of the upper-wings and curving upwards. The sexes differ both in color and size: the male, which is the smallest, is of a deep or Indian-yellow color; on its fore-wings there are two oblique, wavy lines towards the hind margin, a zigzag line near the base, and several spots so arranged on the middle as to form the letters A H, all of a purplish-red color. The hind-wings are broadly bordered with purplish-red, next to the body, and near the hinder margin there is a narrow curved band of the same color. Within this band there is a curved, black line, and on the middle of the wing a large, round, blue spot, having a broad, black border and a central

white dash. The fore-wings of the female are of a purplish-brown, mingled with gray; the zigzag and wavy lines across them are also gray, and the lettered space in the middle is replaced by a brown spot surrounded by an irregular gray line. The hind-wings resemble those of the male in color and markings; the thorax and legs are purplish-brown, and the abdomen is ochry yellow, with a narrow, purplish-red band on the edge of each wing. These moths expand from two inches and three-quarters to three inches and a half."

The only method that can be taken to destroy these insects would be to kill the moths when and wherever found, and to strike the caterpillars from the plants and then crush them under foot. Although they cannot properly be classed among the insects very injurious to cotton, not being sufficiently numerous to do much harm, yet, if left undisturbed, they may so increase as to become a nuisance to the planter both of cotton and corn.

THYRIDOPTERYX EPHEMERÆFORMIS. (*Stephens.*)

Drop or Basket worm.

The drop-worm, as it is commonly called, is occasionally found upon the cotton leaf, but generally infests the arbor-vitæ, larch, and hemlock-spruce. It is also found upon almost all of the deciduous trees, such as the linden and maple. Dr. Harris states that the female worm never quits her case, but lays her eggs in the skin of the chrysalis, in which she herself also remains until the eggs are all deposited, when she closes the end with down, and crawls out of the case and dies. These eggs being hatched, the young worms, after they are hatched, make little silken cocoons, open at both ends, and are covered with fragments of leaves, twigs, &c., in which they conceal themselves, and drag them about wherever they move. These cases are enlarged as the insects increase in size, and are still carried about by the worms. When they move from branch to branch devouring the foliage, they protrude their heads, the first three segments of the body, and six legs, from one end of the case; but when the insects wish to rest, each case is fastened by a few threads to the leaf or branch, and they retreat within. When shaken from the tree by an accident or by high winds, the worms are able to suspend themselves by means of small threads, and hang in the air; hence the name. When young, they are often blown from tree to tree, and thus carried to a considerable distance from the place where they were hatched.

The males and their cases are much smaller than those of the females, the worm being only about an inch in length. The first three segments of the body are whitish, marked with black lines and spots; the segments where they join are brownish; the head is marked with wavy lines of black on a white ground; the rest of the body is of a dirty, blackish-green. It has six pectoral feet, by means of which it moves from leaf to leaf, with its body and case, the latter either perpendicularly suspended in the air or dragged by the worm from behind. There are eight very small ventral and two anal feet, by means of which it clings to the inside of the case. The chrysalis measures about three-quarters of an inch in length, and contains the rudiments of wings, legs, head, and antennæ, like other moths, and is of a dark brown. The perfect moth

comes out in autumn, and measures across the expanded wings about an inch and three-twentieths. Its body is downy, and of a blackish-brown; the wings are semi-transparent, and scantily clothed with blackish scales, which are blackest on the margins and veins; the antennæ are covered at their tips, and are doubly feathered from the base to beyond the middle. The female is much larger than the male, and never leaves her case, but changes into the perfect insect in the shell of the chrysalis, and only emerges from it when the eggs are laid within. The young, after leaving their maternal case, in the spring, immediately commence their cases, and spread over the native tree or any others that may happen to stand near.

These insects are a great nuisance wherever they once get established, as they are exceedingly prolific. One female chrysalis case which was dissected contained seven hundred and ninety eggs, while others have been found to contain nearly a thousand.

These pests are very rarely seen on the cotton plant; and even when such is the case, they may have been blown there from the cedars, maples, or other deciduous-leaved trees in the woods on the edges of the plantations. They are the more particularly mentioned here, from the fact that, if taken in time, they may easily be exterminated on deciduous shade-trees; for, as before stated, the female cases contain all the eggs, and may be seen in winter hanging on the branches when the leaves have fallen. It would therefore require but little trouble to pull them off in the autumn or winter, and burn them, so that neither males nor females could escape. If this course were pursued two or three years in succession, there would not be so many complaints in our cities about the drop-worms destroying the foliage of the trees.

The Œceticus coniferum of Harris, which is said to be found in the middle States, resembles this insect so much in appearance, transformation, and habits, that it is somewhat doubtful whether it is a distinct species, or a mere local variety. The drop or basket worm so common in Maryland corresponds, however, with the specimens named Thyridoptery ephemeræformis of Stephens in the cabinet of the British Museum.

WINE IN NEW MEXICO.

Dr. Henry Hilgert, assistant assessor at Los Lunas, New Mexico, writes as follows:

"I beg to direct your attention to the excellent soil and climate of this country for grape culture; any capital brought here and invested in the product of wine is sure to pay high interest. The manufacture of wine from the grape is mainly the same as described in the highly creditable report of Major W. H. Emory, on the Mexican boundary, vol. 1, page 49, with the exception that several years since a few Americans, Germans, and Frenchmen commenced making excellent wines of grapes, which they annually buy from Mexican vineyard owners or from the Indians of the pueblo of Isletta.

"The wines manufactured by these persons compete with the best products of European wine-makers. The greatest difficulty encountered in the sale of wines is the scarcity of means of sending to market; but as soon as the Pacific railroad is completed as far as New Mexico, there can be no doubt that New Mexican wines will bring the highest prices in the United States markets."

In the public document above referred to, Major Emory alludes to El Paso (latitude 31° 44′, longitude 106° 29′) as one of the garden-spots of the interior of the continent. The following statements are extracted from his report:

"Whatever population may now, or hereafter, occupy the mountain system,

and the plains to the east, must be dependent on mining or grazing, or the cultivation of the grape. The country must be settled by a mining and pastoral or wine-making population; and the whole legislation of Congress, directed heretofore so successfully towards the settlement of lands east of the 100th meridian of longitude, must be remodelled and reorganized to suit the new phase which life must assume under conditions so different from those to which we are accustomed.

"Southern California, the whole of the upper valley of the Gila, and the upper valley of the del Norte as far down as the Presidio del Norte, are eminently adapted to the cultivation of the grape. In no part of the world does this luscious fruit flourish with greater luxuriance than in these regions, when properly cultivated. Those versed in the cultivation of the vine represent that all the conditions of soil, humidity, and temperature are united in these regions to produce the grape in the greatest perfection. The soil, composed of the disintegrated matter of the older rocks and volcanic ashes, is light, porous, and rich. The frosts in winter are just sufficiently severe to destroy the insects without injuring the plant and the rain seldom falls in the season when the plant is flowering, or when the fruit is coming to maturity and liable to rot from exposure to humidity. As a consequence of this condition of things, the fruit, when ripe, has a thin skin, scarcely any pulp, and is devoid of the musky taste usual with American grapes.

"The manufacture of wine from this grape is still in a crude state; although wine has been made for upwards of a century in El Paso, and is a very considerable article of commerce, no one of sufficient intelligence and capital to do justice to the magnificent fruit of the country has yet undertaken its manufacture. As at present made, there is no system followed, no ingenuity in mechanical contrivance practiced, and none of those facilities exist which are usual and necessary in the manufacture of wine on a large scale; indeed, there seems to be no great desire, beyond that of producing as much alcoholic matter as possible. The demand for strong alcoholic drinks has much increased with the advent of the Americans; and in proportion as this demand has increased, the wine has decreased in quality. On one occasion I drank wine in El Paso which compared favorably with the richest Burgundy. The production of this wine must have been purely accidental, for other wine, made of the same grape and grown in the same year, was scarcely fit to drink. Cotton and corn grow with luxuriance, where water can be brought to irrigate the soil, throughout the valleys of the Gila and Rio Bravo, and upon the lower Rio Bravo; and upon the Rio Colorado, below its junction with the Gila, sugar cane flourishes."

IMPORTATIONS OF CLOTHING MATERIAL.

The importations of the year have been enormous, and are reasonable cause for alarm, with reference to the future value and profits of labor. The month of November, it is true, has shown an import of smaller magnitude than November of last year, which was excessive. The manufactures of wool, cotton, and flax used in the United States should be produced within the United States, almost without exception; and those of silk should eventually be added. If the same rate of importation shall be continued, the accumulating surplus of foreign goods burdening the counters of country traders, from the St. John's to the Rio Grande, will displace almost entirely the products of native wool. We are now producing three-fourths of all the wool we need. Excepting carpet and combing wools there is no occasion for introducing a single ounce of foreign wool. We can easily produce all the clothing wool needed or to be

needed for a generation, with double or quadruple our present population; but if the amount required for consumption shall be allowed to come in from abroad, it is very plain that the home production will decline.

The imports at New York city alone, of three successive Novembers, are as follows:

	1864.	1865.	1866.
Manufactures of wool	$619,586	$885,896	$1,205,661
Manufactures of cotton	135,402	815,253	447,210
Manufactures of silk	176,438	588,726	655,221
Manufactures of flax	186,862	533,740	985,066
Miscellaneous dry goods	87,824	27,775	177,539
Total entered for warehousing	1,206,112	2,851,390	3,470,697
Add entered for consumption	1,028,995	9,836,557	3,788,539
Total entered at the port	2,235,107	12,687,947	7,259,236

But the figures for eleven months of the past three years, according to unofficial statements of the New York custom-house entries, are still more significant. It will be seen that the excess of the present year over figures for eleven months of 1864 amounts to more than fifty millions, and thirty-nine millions more than for the same period of 1865:

	1864.	1865.	1866.
Manufactures of wool	$14,272,965	$7,409,031	$18,628,967
Manufactures of cotton	2,968,246	2,571,890	5,830,758
Manufactures of silk	5,049,151	3,827,228	7,940,323
Manufactures of flax	4,326,404	3,346,425	6,816,520
Miscellaneous dry goods	1,114,712	502,151	1,500,542
Total entered for warehousing	27,731,478	17,656,725	40,717,110
Add entered for consumption	42,299,707	63,729,422	79,516,014
Total entered at the port	70,031,185	81,386,147	120,233,124

THE ISABELLA GRAPE IN SOUTH AMERICA.

In the vicinity of Rio Grande, in Brazil, about 33° south latitude, wine from the "American" grape (which is said to be our Isabella, cultivated for many years in its South American home, and improved by its acclimation) has been manufactured very extensively, especially within two or three years past.

The United States consul at Rio Grande, Aaron Young, esq., has communicated to this department some interesting facts relative to the success of the Isabella grape in Brazil. He refers also to the experience of a Brazilian naturalist, Fred. Albuquerque, who has experimented with many varieties of European grapes, some of them from France, and has arrived at the conclusion that grapes from the United States are decidedly preferable for that climate. The Isabella, he declares, is so extraordinarily productive that the cultivation of other varieties has been abandoned. It does not appear that the most popular varieties of this country have been tested there, and the experimenter above mentioned has applied to this department for a few kinds most approved here for table use and for wine, especially the Catawba, Clinton, Hartford Prolific, Dracut Amber,

Delaware, &c. The wine from the Isabella, it is declared, is well received and favorably noticed by connoisseurs, and an interest is awakened for progress and improvement in this new industry which will not permit wine-makers to rest satisfied either with the quality or quantity of product. Mr. Young writes as follows:

"Some twenty-five or thirty years ago, as nearly as I can understand, between the years 1835 and 1840, the idea appears to have occurred to an American gentleman, Mr. Thomas Messiter, then residing in this province, that the culture of the grape for the manufacture of a native wine might be attended with considerable pecuniary advantages to any one possessed of sufficient energy to engage in it, the climate, in his judgment, possessing to a degree the requisites for the successful growth of the vine, and in many respects bearing a close resemblance to that of Georgia. Following out this idea, about the time above mentioned, he succeeded in procuring from the United States a few slips or cuttings of the Isabella grape, and, planting them in his garden, watched with much assiduity and interest their progress towards maturity. But a brief period was required to prove fully to him that the climate not only admitted of its culture, but that its qualities as to fruit-bearing, &c., had vastly increased and improved, the flavor of the specimens taken from his plantations being much superior to that of the same grape produced by the vines of the United States.

"Priding himself on the success attending his experiment, he refused to listen to any of the numerous overtures made to him from neighbors and friends, or the equally numerous offers of purchase for cuttings, from his vines; and although I cannot state positively whether he now endeavored to carry out what was no doubt his original intention, viz., the manufacture of wine, yet it is certain that he derived considerable benefit from the sale of the fruit, and many amusing anecdotes are extant and related of the tenacity with which he endeavored to retain the cultivation in his own possession, even going the length, it is said, of placing his servants as guards over the place of their cultivation, lest cuttings might be obtained notwithstanding his dissent. Finally, however, some of these cuttings found their way into other plantations than his own, and gradually may be said to have overspread the whole province, affording a delicious fruit at so cheap a rate as to be within the reach of the poorest, and at the same time giving rise to a new and well-remunerated employment in the manufacturing of the native wine. *En passant*, I may say that some samples of this wine which have come under my notice appear to quite equal, if not to excel, some of the highly-priced wines sold as Bordeaux. So prolific have been those few slips introduced by Mr. Messiter, and to such an extent have they reproduced themselves, that grapes may be had here in the market during the season for about a cent a pound, and a small German colony, known as the colony of Leopolde, numbering 15,000 to 20,000 inhabitants, has manufactured as much as 500 pipes of this native wine during the last year.

"Another thing may be observed as worthy of remark in the growth of the vine here; that is, the enormous size some of its main trunks attain. I think I do not exaggerate in placing the circumference of some I have seen at fifteen to twenty inches.

"It is to me an interesting question, whether slips from the improved vine here would not improve the Isabella in the States; for most certainly no such fruit for deliciousness is known there."

The consul promises to give some facts concerning the *mandioca* or *farinha*, and the *erva mati*, and reports a prolific yield of tobacco in that province; one little German settlement, Santa Cruz, producing four million pounds, worth a quarter of a million of dollars.

TRICHINÆ IN PORK.

A letter to this department from Charles J. Sundell, consul at Stettin, in Prussia, announces the scourging of another locality by the fatal effects of introducing pork infested with these parasites into the human system. It also notices the recent terrible ravages of cholera in Stettin, by which 2,118 died of 3,416 attacks, among a population of 80,000. The following extracts are made:

"About that most dreadful disease in swine called trichinæ, nothing further was heard here since the Hadersleben calamity in January and February last, until recently; the reappearance of said malady is now being reported from the city of Greifswald, in this province. The meat of one single animal, and that not wholly used, as some remaining parts thereof were confiscated as soon as its infection was discovered, seems to have been enough to infest with these parasites over sixty persons, and among these some of the best men there. The sufferings from this shocking intrusion into the system is said to be attended with most distressing agonies, and it is feared that many of those affected will pay with their lives for yielding to that peculiar taste for raw, chopped, or insufficiently cooked and smoked meat, so prevalent in this country. It is stated that those who had partaken of sausages prepared fresh from the infected meat, and only superficially smoked, are subject to worse pains than those who had eaten cutlets and other dishes insufficiently cooked. It follows therefrom that the greater the heat to which such meats are subjected the surer will the parasites therein be made harmless, and this is a simple fact which cannot be too strongly impressed upon the mind in a country like ours, where pork is so extensively eaten. It is also contended that by cutlets it is hardly possible to have the heat penetrate the meat sufficiently without burning some portion of the chops. The simple remedy would be to prepare cutlets without bones, and so with all other dishes from swine's meat.

"The scientific commission of the medical faculty in Prussia gave as their decision, under date of the 14th of February last, that microscopical examinations of certain (enumerated) parts of the swine would be the surest way to prevent these fearful diseases. The government has, therefore, now recommended microscopic meat inspections, and that much care be taken in thoroughly cooking and preparing, but such examinations have not been made obligatory. This advice, as the Greifswald calamity proves anew, is discreet and well meant, but butchers and meat sellers here seem to care little about it, and it is now publicly proposed that those who sell trichinous meat be made responsible for the consequences. Thus it will be seen that the people here are in earnest to guard, if possible, against the recurrence of this late discovered ill that human flesh is heir to."

ITEMS OF FRENCH INDUSTRY.

The following facts of agriculture are given upon authority of M. Weyhe, a French writer upon national economy, from original translations:

TEASELS.—French teasels, generally cultivated in the vicinity of Avignon, are becoming an important article of commerce, they being considered by manufacturers of cloth as three times as durable as those raised in Germany, attributable to the peculiar fitness of the soil from which they grow.

MADDER.—The madder grown in the department of Vaucluse is of such excellent quality as to be generally preferred to the Silesian, Dutch, or eastern product. The cultivation of this coloring plant is also carried on to considerable extent in Alsatia, being disposed of for coloring cloth for the French army.

Present prices are low, owing to the decrease of the manufactory of colored cotton goods.

Tobacco.—In consequence of the monopoly of tobacco production in France, its cultivation is carried on under great difficulties and to a limited extent in many districts, being controlled entirely by the revenue interests of the government. The receipts of the latter from this source are constantly on the increase, advancing from 79,499,379 francs in 1846, to 200,000,000 francs in 1864. It is a fact derived from observations of the revenue officers that the consumption of tobacco increases in about the same ratio with that of beer.

Cattle.—The production of cattle in France has considerably increased within the past few years, caused mostly by the large importation of cattle from England, particularly of the short-horned breeds.

Poultry and eggs.—The production of poultry and eggs is also carried on extensively. The total value of such products for the year 1852 is estimated at 44,000,000 francs, now increased to about 55,000,000 francs. The city of Paris, in 1852, consumed poultry and game to the amount of 15,000,000 francs, and in 1863 the figures had advanced to 21,000,000 francs. In looking back we find that in 1789 but eight pounds of poultry and game to each person were consumed, while in 1864 the amount had increased to thirty pounds. The adjoining countries, England in particular, import large quantities of fattened poultry from France. The best poultry is furnished from the vicinity of Bresse, and fattened poulards (capons) bring about forty francs. In 1864 England imported 277,000,000 of eggs, of which France furnished three-fourths. Eggs are not only used for food, however, but from them the albumen is extracted to mix with colors in calico-printing manufactories. The consumption of this article in Alsatia is about 250,000 pounds a year, at a cost of $250,000. It takes the white of 132 eggs to make one pound of albumen. The Industrial Society of Muhlhausen has offered a prize of $4,600 for the discovery of a substitute for albumen, not valuable for the subsistence of human beings, and not derived from the blood or spawn of fishes, the albumen from which is injurious to colors.

Spirits.—The progress of the manufacture of spirits in Germany is rapidly increasing, and it is claimed that Prussian spirits command a higher price, in consequence of their fine flavor, than those manufactured in France or England. A very fine article of spirits is being produced from potatoes, containing from 93 to 95 per cent. It is made so clear that by mixing it with other fluids not the least disagreeable flavor can be detected; hence German spirits are now generally used for adulterating purposes, being considered the best article produced.

Wine.—The wine production of France in 1864 was above the average in most of the departments; barrels became scarce, and one hectolitre (22 gallons) of good table wine could be bought for eight or ten francs. The whole crop was estimated at from 800,000,000 to 900,000,000 francs, about one-fifth of which was distilled for Cognac and Armagnac. The export of liquors to England in 1862 reached 8,213,723 gallons, and from January 1, 1864, to August 1, of the same year, seven months, amounted to 11,086,580 gallons. France has about 9,000,000 acres of land under wine culture. In but ten of the eighty-six departments is there no wine produced. The largest yield is made in the departments of Gironde and Charente.

Silk culture.—The production of silk is of great importance in the south-easterly part of France, where, it is claimed, the best quality known is made, the soil and management operating together in uniformity, and nature asserting the old rule, that as a plant reflects the quality of the soil, so will all products of the animal which receives nourishment therefrom. The precious textures and the splendid white satins from Lyons, in demand from all quarters of the globe, are manufactured mostly from French silks, the inferior kinds only being made of foreign production. The silk-worm disease has served to discourage the silk manufacturers to a considerable extent, and to obviate the difficulty cocoons

have been imported from various parts of the world. Those brought from Japan have proved to be the best, while the varieties received from Wallachia were the poorest.

FARM STOCK OF SWITZERLAND.

The United States consul at Basle, in Switzerland, A. L. Wolff, esq., seeing no statement concerning the stock of Switzerland in the estimates of the farm stock of European states, published in a recent number of these reports, sends the following exhibit of such property in the only republican state of Europe, as reported by the statistical bureau of that country April 21, 1866.

The totals, representing 205,400,000 francs, are as follows:

		Francs.
Horses and mules	105,663, estimated at	26,400,000
Cattle	991,722, estimated at	158,700,000
Sheep	445,514, estimated at	6,700,000
Swine	306,062, estimated at	9,100,000
Goats	276,020, estimated at	4,500,000

The following table is an exhibit of farm stock of the several cantons:

Cantons.	Horses.	Mules.	Cattle.	Swine.	Sheep.	Goats.
Zurich	4,779	9	70,199	23,335	2,110	16,472
Berne	29,212	137	195,466	61,717	104,189	75,886
Luzerne	4,838	9	65,198	35,690	15,359	15,461
Uri	426	1	11,088	1,531	12,866	13,133
Schwyz	1,267	3	23,102	3,978	11,495	8,928
Obwalden	433	.....	8,988	2,881	3,906	5,334
Nidwalden	168	6	6,026	1,547	1,206	1,434
Glarus	378	5	9,208	3,088	3,090	6,399
Zug	515	.....	7,226	2,227	735	552
Frieburg	9,076	175	60,088	21,650	23,463	11,294
Soleure	2,962	15	28,315	9,326	6,673	9,176
Basle City	1,120	2	1,644	710	276	167
Basle Land	1,940	3	14,042	3,776	5,816	3,680
Schaffhausen	1,316	2	8,901	5,096	176	3,166
Appenzell, O. Rh	768	.....	14,963	2,643	1,087	3,034
Appenzell, I. Rh	262	.....	6,748	2,446	919	4,825
St. Gallen	5,525	29	69,520	12,454	18,408	21,064
Granbunden	3,119	36	81,860	18,236	86,751	46,212
Aargau	3,728	12	62,948	19,565	3,377	11,390
Thurgau	3,152	5	34,662	6,660	2,697	6,569
Tessin	1,067	876	45,133	11,902	26,165	63,616
Waadt	17,086	359	77,533	38,577	49,086	15,827
Wallis	2,204	3,164	61,811	9,619	60,087	28,424
Neuenburg	2,371	107	19,099	3,510	4,666	2,812
Geneve	2,652	349	7,954	1,898	911	1,165
Total	100,364	5,304	991,722	304,062	445,514	276,020

The consul says: "The rinderpest was brought into Switzerland by a cattle dealer coming from Brezentz, in Austria, who crossed the frontier of Switzerland with his herd of cattle, which he had purchased in the market of Vienna. Of this herd only three animals were forwarded to Coire, enough to spread the pest in six stables with twenty-two cattle. In the same way it was brought to Tablet, near St. Gall. As soon as the authorities had received information, the

federal council, appreciating the danger, appointed an extra commissioner, who was ordered to take steps, in connection with the local authorities, to guard further spread of the disease. The first step was the establishment of a cordon against further importation from neighboring states. A strict, careful observation, and prompt action of the local authorities, had its effect, and the disease disappeared, except a few cases.

"On the lake of Zug a company of Americans have the intention of establishing a milk-condensing factory. Machinery has already arrived, and a new building is to be finished during the year. As they can buy milk cheaper than in any other country, it is expected that a profitable business will be made."

CORN AND WHEAT IN CHICAGO AND MILWAUKEE.

The following is a statement of the receipts of corn in Chicago for four years, showing a very heavy movement of that cereal during the past autumn:

Years.	Bushels of corn.	Decrease.	Increase.
1862–'3	28, 086, 664	2, 390, 227	.....
1863–'4	13, 720, 974	14, 365, 691	.....
1864–'5	24, 693, 905	.....	10, 972, 931
1865–'6	32, 837, 736	.....	8, 143, 831

The year in the above ends November 1. In six weeks following that date, in the present season, the receipts of corn have been 1,494,927, against 864.999 last season, an increase of 624,926 bushels.

The following table exhibits the quantity of wheat and flour received, the latter reduced to bushels and placed in the aggregate:

Years.	Bushels of wheat.	Barrels of flour.	Total of wheat and flour in bushels.
1862–'3	11, 912, 507	1, 580, 802	19, 816, 517
1863–'4	13, 395, 729	1, 431, 790	20, 554, 679
1864–'5	9, 431, 137	979, 694	14, 329, 607
1865'–6	8, 482, 526	1, 532, 411	16, 144, 581

The receipts of grain at Milwaukee from January 1, 1866, to December 12, have been as follows:

Flour	442, 978 barrels.
Corn	761, 762 bushels.
Oats	1, 774, 525 do.
Rye	372, 503 do.

For the same period shipments have been made as follows:

Flour	694, 305 barrels.
Corn	479, 979 bushels.
Oats	1, 934, 116 do.
Rye	255, 312 do.

STATISTICS OF RINDERPEST IN GREAT BRITAIN.

	Scotland.	Wales.	England.	Great Britain.
Area in acres	19,639,377	5,102,885	32,221,998	56,964,260
Number of cattle to 100 acres	4.8	11.3	10.2	8.4
Total census of cattle, March 5, 1866	937,401	578,136	2,270,299	4,785,836
Number of cattle died or killed to March 3, 1866	31,236	5,565	113,010	149,811
Total number attacked	49,861	8,388	198,474	253,723
Total number killed	6,263	1,180	77,570	85,013
Total number died	28,088	5,794	90,421	124,303
Total number recovered	10,707	1,117	21,589	33,413
Number unaccounted for	1,803	297	8,894	10,994
Percentage of attacks	4.838	1.437	5.866	5.141
Number of sheep, March 5, 1866	5,255,077	1,799,821	14,993,383	22,048,281
Total number farms, sheds, or places where sheep have been attacked	10	.....	94	104
Number slaughtered to prevent spread of disease	.....	.....	419	419
Number attacked	159	.....	6,667	6,826
Number killed	39	.....	1,053	1,092
Number died	99	.....	4,541	4,640
Number recovered	18	.....	1,013	1,031
Number unaccounted for	3	.....	60	63

RECENT EXPORTS OF CEREALS

To Great Britain and Ireland since September 1, 1866:

From—	Flour.	Meal.	Wheat.	Corn.
	Barrels.	*Barrels.*	*Bushels.*	*Bushels.*
New York, December 11	36,025	416	231,599	2,318,666
New Orleans, December 5	.....	.....	.....	.....
Philadelphia, December 8	.....	.....	3,345	38,983
Baltimore, December 8	.....	.....	.....	1,897
Boston, December 8	19	.....	.....	.....
Other ports, (California, &c.,) December 8	7,027	.....	1,256,591	9,262
Total 1866	43,071	416	1,491,535	2,368,808
Total 1865	39,562	1,984	779,990	2,624,878
Increase	3,509	.....	711,545	.....
Decrease	.....	1,568	.....	256,070
Total 1864	38,629	.....	1,202,734	56,933
Total 1863	352,502	10	4,301,440	239,459

To the continent:

From—	Flour.	Wheat.	Corn.	Rye.
	Barrels.	*Bushels.*	*Bushels.*	*Bushels.*
New York, December 11	1,230	.....	208	16,113
Other ports, to latest dates	16	.....	.....	.....
Total 1866	1,246	.....	208	16,113
Total 1865	2,420	15,960	100	50,216
Total 1864	8,863	41,357	.....	.....
Total 1863	23,657	128,295	.....	13,965

AGRICULTURAL PRODUCTS AND MANUFACTURES.

The following table shows the amount of imports of certain raw products and manufactures of agriculture into Great Britain for the first nine months of 1865 and 1866:

Articles.	1865.	1866.	Increase.	Decrease.
Wheat	£6,137,962	£8,863,153	£2,725,191	.....
Barley	1,772,358	2,148,102	375,744	.....
Oats	1,978,732	2,730,189	751,457	.....
Peas	139,237	369,737	230,500	.....
Beans	254,230	245,997	.....	£8,233
Indian corn or maize	1,261,954	3,647,578	2,385,624	.....
Wheat meal and flour	1,560,208	2,650,528	1,090,320	.....
Cotton, raw	36,187,355	62,838,162	26,650,767	.....
Cotton manufact'res not made up	496,160	782,298	286,138	.....
Flax	3,515,406	3,380,495	.....	134,911
Guano	1,920,842	959,975	.....	960,867
Hemp	992,532	1,254,974	.....	262,442
Jute	960,957	1,244,047	283,090	.....
Hides	1,556,199	1,955,463	399,264	.....
Metals, copper	1,730,365	1,894,575	164,210	.....
Provisions	7,055,544	7,273,543	217,999	.....
Rice	647,824	675,217	27,393	.....
Seeds, flax and linseed	2,410,560	2,071,561	.....	338,999
Timber, deals, battens, &c.	4,195,708	3,520,174	.....	675,534
Timber, not sawed or split	3,454,258	2,519,853	.....	934,405
Tobacco, unstemmed	1,034,056	662,936	.....	371,120
Tobacco, stemmed	202,342	364,718	162,376	.....
Wine	2,690,926	3,579,859	888,933	.....
Wool	11,434,013	12,931,762	1,497,749	.....
Woollen manufactures	1,222,827	1,407,030	184,203	.....

The following is a statement of exports for ten months of the years 1865 and 1866:

Articles.	1865.	1866.	Increase.	Decrease.
Cotton yarn	£1,295,063	£2,047,506	£752,473	.....
Manufactures—piece goods	36,616,490	48,565,774	11,949,284	.....
Thread	594,964	885,435	290,471	.....
Leather, wrought—boots and shoes	1,220,030	839,164	.....	£380,866
Linen yarn	2,042,406	1,930,740	.....	111,666
Linen manufactures—piece goods	6,798,938	7,616,279	817,341	.....
Thread	471,952	447,711	.....	24,241
Silk manufactures	1,190,773	1,160,075	.....	30,698
Wool, sheep and lambs'	719,457	752,677	33,220	.....
Woollen and worsted yarn	4,573,346	3,768,539	.....	804,807
Manufactures—cloths, &c	3,357,965	4,692,354	1,334,389	.....
Blankets	490,636	415,169	.....	75,467
Carpets and druggets	664,618	1,080,133	415,515	.....
Worsted stuffs and waistcoatings	10,803,040	13,390,232	587,192	.....

THE FOOD OF ENGLAND.

The importance of meat production in a country having a large population and a diversified industry is strikingly suggested by this item of British importations:

	1842.	1853.	1863.	1864.	1865.
Horned cattle, No.	Prohibited	125,253	150,898	231,733	283,271
Sheep, No.		259,420	430,788	496,243	914,170
Bacon & hams, cwt	8,355	205,667	1,877,813	1,069,390	713,346
Butter, cwt	175,197	403,289	986,708	1,054,617	1,083,717
Eggs, No.	89,548,747	123,450,678	266,929,680	335,298,240	364,013,040

The upward tendency of wages of labor in that country, and the prevalence of rinderpest, are causing a gradual but constant increase of prices of meats, as will be seen:

	1864.		1865.	
	November.	December.	November.	December.
Oxen and bulls:	£ s. d.	£ s. d.	£ s. d.	£ s. d.
From Portugal and Spain	16 0 0	16 10 0	17 0 0	17 0 0
From other countries	15 0 0	18 10 0	17 8 0	19 0 0
Cows	16 0 0	16 0 0	14 6 8	16 0 0
Calves	4 19 6	5 0 0	4 0 0	4 15 0
Sheep:				
From Hanse Towns	1 14 0	1 10 0	1 0 0	0 19 0
From Holland	1 15 0	2 0 0	2 11 0	2 11 0
Lambs	0 17 0	1 5 0	0 15 0	0 15 0
Swine and pigs	2 5 0	2 6 0	3 0 0	3 0 0

Would it not be better for the farmers of the United States, in view of such facts, to produce more barrelled beef, hams, lard, and other meat products, and, meanwhile, increase the fertility of the soil, than to attempt to export breadstuffs, sink half their value in freights, and most of the other half in the impoverishment of the soil?

PRICES OF GRAIN AND FLOUR IN ENGLAND.

The prices of grain of various kinds, and flour, from different countries, were as follows on the tenth ultimo—the quantities being reduced to bushels and barrels, and shillings to dollars and cents:

Wheat—English, old white	per bushel..	$1 94 to	$2 03
English, old red	do.....	1 88 to	1 94
English, white, new	do.....	1 72 to	1 94
English, red, new	do.....	1 50 to	1 81
Danzig and Kœnigsberg, high mixed	do.....	2 00 to	2 12
Danzig and Kœnigsberg, high new	do.....	1 81 to	1 94
Rostock and Wismer, new and old	do.....	1 87 to	2 00
Stettin, Stralsund, and Wolgast	do.....	1 87 to	1 97
Rhenish and Brabant	do.....	1 87 to	1 94
St. Petersburg, soft	do.....	1 68 to	1 77
American and Canadian, red	do.....	1 81 to	1 87
Odessa, soft	do.....	1 65 to	1 75
Flour—Town made	per barrel..	8 22 to	9 28
Country marks	do.....	7 00 to	7 53
French and Belgian	do.....	7 53 to	8 22
American and Canadian, fancy brands	do.....	8 25 to	8 75
American superfine to extra superfine	do.....	7 75 to	8 00
American common to fine	do.....	7 50 to	7 75
American heated and sour	do.....	7 00 to	7 25
Indian corn—American white	per bushel..	1 12 to	1 16
American yellow and mixed	do.....	1 03 to	1 09
Galatz, Odessa, and Ibrail, yellow	do.....	1.09 to	1 12

ALSIKE CLOVER

The introduction of Alsike clover promises to benefit permanently our agriculture, and acknowledgments of its value are received by this department from various quarters. The Commissioner, in his recent report to the President, says, "In experiments with the clovers the Alsike proved very satisfactory, growing with rank luxuriance in this climate and remaining green and succulent to a late period in the season. It has been cut three times, and at the present writing (November 15) presents a fine appearance."

A correspondent in Pennsylvania says: "I failed to obtain seed from my Alsike clover. This hybridous plant,* in most respects, partakes more of the nature of the *white* than the red clover. It produces its seed from its spring or first growth. In a former communication I stated that my cattle were permitted to enjoy the first. Hence the loss of seed. It, however, continued to grow much better throughout the summer and autumn than the white clover, and its growth is evidently not so injuriously affected from dry weather."

* It is understood to be a distinct variety not produced by hybridization. Its botanical name (Trifolium hybridum) probably misleads our correspondent.

BOTS IN HORSES.

The following is the substance of a note from Brevet Colonel J. Hamilton to Professor Townend Glover, entomologist of this department, dated at Raleigh, North Carolina:

"I observe in your report for 1864, that you say that no very certain means of ridding the horse's stomach of the bots has yet been published. Since receiving the following from Dr. Gee, of Florida, I am glad that I have had no opportunity of trying it, but it has the air of efficacy, and I certainly *shall* on the first opportunity. You are aware that it is hard sometimes to distinguish between an attack of the bots and one of the colic; this remedy, however, is equally efficient for either. The reason that a bot can resist the action of agents administered is his power of drawing his head into the walls of the stomach by his tentacles. But he cannot resist the chloroform. A table-spoonful of chloroform screened by a couple of spoonfuls of any good mucilage will make him let go his hold on the stomach even after having bored nearly through."

PROBSTIER OATS.

This variety of oats is thus referred to by a correspondent: "I commenced with five quarts, from which I gathered two and a half bushels. Through the carelessness of a servant, one bushel of this was fed to the horses. Hence, one and a half bushel was sown broadcast on about half an acre, on the 6th day of April last. From this I have received twenty-nine and a half bushels of splendid grain, weighing thirty pounds to the bushel. The straw is decidedly superior as forage, it being better supplied with leaves, and the stalk is by far less brittle than the common varieties. Indeed one could not well imagine the difference in favor of the former, after passing through the thresher. While the common varieties are broken into shreds, the other is merely bruised, with a very large per cent. of the leaves remaining to the stalk."

LARGE AND SMALL POTATOES.

From the weekly journal of the Agricultural Society of the Grand Duchy of Baden we condense an analysis made by Dr. Nessler to determine the relative nutritive value of large and small potatoes. For the purpose named, potatoes of three sizes were selected, the largest being about two inches in diameter, the smallest about the size of walnuts, and the third a medium between the two, yielding the following percentage of starch: large size, 17.2; medium, 15.2; smallest, 14.6.

* * * * * * *

CHEAP BEEF SUPPLIES.

South America is becoming a strong competitor with more cultivated countries, not only in wool production, but in meat supplies. The South American pampas have long been the home of immense herds of cattle. Columbus, in one of his New World voyages, brought specimens of European stock. Importations

followed in the various settlements in South America. The Indians were early taught by Jesuit missionaries to milk the cow and use her milk and meat, and ultimately to yoke oxen by the horns for hauling drift-wood and other burdens. More than three hundred years ago cattle were taken from the coast of Brazil to the grassy plains of Paraguay. Prior even to that importation, it is claimed that herds were established in Peru, introduced from the Pacific coast, which soon spread into the Pampas.

The following facts concerning this interest are from Rev. G. D. Carrow, who furnished an essay on the subject for the agricultural report for 1865:

"In killing cattle for home consumption the butchers first hamstring them and then cut their throats. In dressing them they are not suspended, but flayed on the ground. Some years ago the Buenos Ayrean city fathers prepared a slaughter-house of the same style and conveniences as are common in other countries, but the butchers refused to occupy it, and steadfastly adhered to the old custom of hamstringing and throat cutting in an open pen. The carcass is divided in a mode somewhat peculiar. The tenderloin is taken out and sold by itself. Beef is never weighed in market, nor even measured, except by the butcher's eye, who acquires great exactness in subdividing the quarters of an animal so as to make the pieces suit the daily, bi-weekly, or tri-weekly demands of his customers. The beef market of the pampas was in former years probably the cheapest in the civilized world. So recently as twenty years ago an ordinary cow or heifer could be bought for one silver dollar, and a large fat steer for two dollars and a half. Now, the prices of the same animals range from eight to twenty dollars. In 1858 a piece of sirloin, weighing ten pounds, could be purchased in the market of Buenos Ayres or Montevideo for fifty cents, and in the towns of the interior for half that sum.

"The natives are very partial to roast beef, which they term *asado;* but their mode of preparing it is peculiar to themselves. They take the best roasting pieces and cut away the flesh till the rib is reduced to nearly the thinness of an ordinary spareribb of pork, according to our method of butchering. This is done to suit their mode of roasting, which is never in accordance with that which obtains in Paris, London, or New York. Instead of the oven, they still use the more primitive spit. This is a piece of iron about four feet long. It is run through the meat, and, if the meat be prepared in the open air, is stuck into the ground at such an angle as brings the meat into contact with the tip of the flame; or, if the meat be prepared in the kitchen, the spit is inclined against the chimney in about the same position. The fire is kindled with weeds or small dry faggots cut from the paradise or peach tree. As this consumes very quickly, fresh fuel is constantly supplied. When the fat of the flesh ignites and blazes, the cook seizes the spit, blows out the flame, and then returns it to its place. This is repeated till the meat is nearly done, when the spit is laid across two large bricks, and the process of cooking is completed by toasting a few minutes over the fresh coals. Meat cooked in this way is somewhat smoked and a good deal blackened, but it has a juiciness and a peculiar flavor which could not fail to commend it to the palate of a finished epicure.

"Some travellers complain of the toughness of the native roast, but the writer's experience is altogether in conflict with their statements, and his impression is that they must have fallen into the hands of a very unskilful cook, or upon the carcass of an animal that had been toughened by poverty and leanness or unusual length of days. The qualities of the beef are very superior. English residents, generally, do not esteem it; but this is owing to that intense national egotism from which few even of travelled Englishmen ever entirely recover. They will roundly assert that neither first-rate beef nor mutton can be found beyond the limits of the British isles. But many Americans, who have travelled extensively on both continents, consider the best pampa beef fully equal, if not a little superior, to the best beef ever brought to an English market. It has not

the same amount of fat, nor is the fat so thoroughly distributed through the lean portions of the carcass, but it is sufficiently fat to meet the demand of any delicate and well-educated palate. The *tissues* are so fine as to render the flesh peculiarly tender, and, when cooked, it has a flavor akin to that which distinguishes the flesh of the wild duck from that of the flock which is hatched in the poultry house, and reared in the barn-yard. It is also very easily digested. A feeble, dyspeptic stomach may take as much as the appetite of a hungry man will ever crave and not be oppressed by the indulgence. Pampa beef, as well as pampa air, might safely be prescribed for all invalids suffering from dyspepsia, and assailed by its veteran ranks of horrors and blue devils.

"An establishment for preparing jerked beef is called a '*saladero*'—literally, salting tub. The mode of slaughtering the cattle and preparing the beef is very simple. As in the case of 'marking,' the herd is driven into a large pen. A man or boy, with a lasso attached to his saddle girth, throws the noose around the horns of the animal. The lasso traverses a pulley, suspended from a cross-beam resting on two strong upright posts. The horse draws the head of the animal directly up to the beam, where a man or boy sits with a long knife. The moment the head touches the beam the knife severs the spinal cord just back of the horns, and the animal drops on a movable platform which runs on a tramway, and is immediately drawn out of the pen by hand and placed under an open shed, where two men, without hanging the carcass, quickly flay it right and left; two others take out the intestines, cut off the head, divide the trunk into four quarters, hang them on hooks, cut them in slices, throw them into a handbarrow, and, while one wheels off the flesh to be salted, another conveys the hide, bones, horns, and tallow to their appropriate places. In the salting shed is a large tank filled with strong pickle. The slices are deposited in this for a short time, in order to wash them from all blood. They are then hooked out and packed under the shed in alternate layers of meat and salt. The slices take sufficient salt in about a week. They are then removed to another part of the shed, turned, and piled again. This moving and piling is repeated several times. The meat is then hung on poles in the sun for a few days, when it is again piled for the last time, and looks in this, its last stage of preparation, in the separate pieces, very much like codfish or sole leather; and, in the aggregate pile, very much like a stack of corn-husks that has stood the storms of a New England winter."

Several new processes of curing beef and mutton are patented in European countries and practiced with a good degree of success.

That of Mr. John Morgan, which is quite simple, is based on forced infiltration, with the adoption of the circulatory system as a means for introducing brine into the tissues at little labor and inexpensive machinery. The animal, if a sheep, is killed by a blow on the head; if an ox, by the insertion of the point of a knife at the back of the head, which severs the spinal cord, and causes instantaneous death. The chest is then sawn open, and kept so by a cross-piece of wood, and the heart is exposed. An incision is made in the right ventricle, and another in the left, the blood being allowed to escape; when it has ceased flowing, a pipe with a stop-cock is introduced into the incision in the left ventricle of the heart, and so into the aorta or great vessel leading through the body, and is there firmly retained. This pipe is connected by a gutta percha flexible tube to a barrel containing the fluid to be injected, which is composed of water and salt, (one gallon of brine to the cwt.,) and a quarter to a half pound of nitre carefully refined, and fixed at an altitude of from eighteen to twenty feet. The briny fluid being let on, rushes out at the right side of the heart after traversing all the circulatory organs, clearing the vessels and capillaries, and preparing the body for the second stage, which is performed by closing the incision on the right side of the heart with a sliding forceps, and thereby rendering the circulatory system perfect, with the vessels free and ready to receive the preservative

fluid. A few seconds suffice for the brine to infuse the whole body, when by cutting the ear or hoof of the animal, a stream of clear pure brine, untainted by a single particle of blood, will instantly be seen to flow.

Liebig's process reduces the meat to an "essence of beef," requiring thirty-three pounds of meat to make one pound, which is assumed to be sufficient for a soup for one hundred and twenty-eight men. The flesh of the animal is left twenty-four hours after killing to cool, then reduced to a pulp between round iron rollers armed with points, and turned by steam power, and afterwards steamed an hour in a vat of water. A trough-shaped reservoir with a sieve at the bottom draws the juices into a vat, from which the fat is drawn off, and after passing through a filtering vat it is packed in tins as extract of beef. It brings three dollars and upwards per pound in London.

The process of Messrs. Paris and Sloper aims to preserve the meat in the condition of fresh beef, by the destruction of oxygen in the vessel in which it is packed. The bone is extracted, but fat remains. This meat is sent to England to supply the meat deficiency produced in part by the prevalence of the rinderpest, where it is sold for four to five pence per pound, or eight to ten cents of our money. It seems to give pretty good satisfaction. The report explains that "from the tins in which it is placed the air is exhausted by means of water forced in at the bottom, which, when it reaches the top, is allowed to redescend and run off, and the vacuum thus left is filled from above by a certain gas, the composition of which is kept a profound secret. The two holes at the top and bottom are carefully soldered down, and the meat is then ready for exportation. The only risk it runs is from leakage, the smallest opening in the tin case proving destructive, by allowing the gas to escape and the air to get in."

Several processes have also been discovered in this country for the reduction of the nutritive elements of beef to convenient portable bulk, among which may be mentioned that of Gail Borden, of Texas, of "condensed milk" celebrity, who gave us the meat biscuit, but which appears to have been practically discarded. A few years since, Professor Horsford, of Harvard College, invented a process of desiccation, whereby many rations of beef might be carried by the soldier in his haversack, but the condensation did not become popular with the army, and can scarcely be called a success, though modifications may yet render it such.

Prior to the late war, Dr. N. B. Marsh, of Ohio, devised a system of embalming beef, and removed to Texas for the purpose of engaging in the enterprise. He soon after died, however, and the patent was neglected until recently, when it was purchased by Colonel W. C. Alberger, of New York. By this process the animal is killed by a blow on the head, the breast-bone is lifted, both sides of the heart opened, and as soon as the blood ceases to flow, a pipe is inserted in the left side of the heart, connected with a tank of cold brine. The brine is forced through the arteries and capillaries, and in a few moments it is found pouring out from the right side of the heart. The meat is thus chilled and can be immediately cut and packed. The animal is dressed after the curing.

EXTRACTS FROM CORRESPONDENCE.

Smyth county, Virginia.—Sorghum is becoming an important crop in this county. From close observation I think there will be 25,000 or 30,000 gallons of molasses made the present year. No sugar is made from it; the impossibility of getting molasses during the war compelled the people to make their own, and this has proved that it is a profitable crop. If well made and properly cleansed it makes a superior article to New Orleans sirup.

Liberty county, Florida.—Our sugar-cane has become so hard and woody that

we make but a poor article of sugar; although the growth of the cane may be ever so large, the yield is small. We are glad to see that you have called the attention of Congress to this matter, and hope we may receive some India cane to regenerate our crops.

Morgan county, Georgia.—All our crops are so poor that before another year there will be much suffering. Corn must be shipped from the north to make a crop, as it is the opinion of many that the amount on hand will hardly supply the inhabitants through the year. Corn sells readily at $1 70 per bushel.

Coffee county, Tennessee.—To say the least of our crops, they are, in all cases, except wheat, equal to any former year within my recollection. The corn crop is a full average yield, with more acreage.

Baltimore county, Maryland.—The corn crop is a very heavy one, equal in quality and quantity to that of 1865, while the buckwheat crop will be double that of last year. The crop of potatoes is very large, but the rot has made its appearance, particularly in the low lands; the damage cannot be estimated at present, but will not be great. More sorghum cane is coming into the mills than last season, and of a better quality. The tobacco culture is gradually falling off in this county, and in some localities has been entirely abandoned, farmers paying more attention to the dairy.

King George county, Virginia.—Late corn has improved in a slight degree, but the crop is estimated by the most judicious farmers to be diminished one-third by the dry summer. The aggregate crop in the northern neck of Virginia will hardly reach one-fourth the crop of former years.

Lewis county, Kentucky.—The crops have not been so abundant throughout the country for the past twelve years, wheat alone excepted, of which latter there was not enough raised for seed. Potato crop never so large.

Amelia county, Virginia.—The lateness of the fall has enabled the farmer in every instance to save his entire crop of tobacco, though last June, the plants being abundant and season propitious, every one put into the ground more than he thought he had labor to protect from the worms and suckers, and save finally from the frosts; but the crop is housed, mostly "cured," and upon the whole is as good as it generally is, one year with another.

Indiana county, Pennsylvania.—The culture of sorghum cane has been quite successful in the southern part of this county, the yield having been upwards of 125 gallons of molasses per acre, while some lots have produced a gallon per square rod of ground, or 160 gallons to the acre. With the necessary manufacturing apparatus I have no doubt that the crop will be largely cultivated hereafter, and prove one of the most remunerative of farm productions.

Warren county, Indiana.—The potato rot is almost universal in this locality, none but the variety called the Peach Blows escaping almost entire destruction.

Johnson county, Iowa.—Potatoes are very much below an average, the result of the "potato bug," though the quality of the crop in this county is, I think, fully an average compared with last year.

Warren county, Illinois.—There is scarce half a crop of potatoes in this county. Both early and late varieties were carried off by the "ten-striped spearman," a bug never seen here before.

Ogle county, Illinois.—A disease (I think, worms) has been spreading among the hogs, and farmers have been losing them by the hundred. In almost all cases the hogs have passed quantities of large worms. The only remedy yet tried, that appears to do any good, is black antimony given in sweet milk.

Butler county, Kentucky.—Hogs are yet dying of cholera. We have no remedy for cure, but the crude petroleum is used by many as a preventive. I tried it and some of mine recovered, but I did not think the petroleum cured them, though I thought it prevented others from taking the disease.

Douglass county, Kansas.—Grasshoppers have destroyed all early-sowed wheat. They are still quite numerous.

Collin county, Texas.—Grasshoppers appeared in the northwest part of this county about the 1st ultimo, and destroyed all the wheat that had come up, and then passed on to the southwest. They have nearly disappeared. They fly very high, and in some places were so thick that we estimated them at one to the square inch.

COTTON.

Macon county, Georgia.—The cotton crop is now gathered with slight exception, and I can now give results. I planted 150 acres, and expected to make fifty bales of cotton, weighing 450 lbs. to the bale. I have made but 22 bales, 9,900 lbs., worth about 25 cents net per lb., $2,475. Expenses: provisions, costing $2,000; hire of freedmen, $1,200; overseer's wages, $700; total, $3,600. Thus, you see, I have incurred a loss of $1,125, leaving out of the calculation interest on value of lands and mules, and wear of implements. My corn crop was almost an entire failure. This is about a fair average for this section of the country.

Oxford county, Georgia.—The appearance of ice this morning settles the case of "King Cotton" for this year. I do not think more than a third of a crop will be made in Georgia this year.

Taylor county, Georgia.—In most localities the cotton is all opened, and will soon be housed should the present fine weather continue. The staple of cotton is not as good as it has been in former years, but the color is generally good.

Claiborne county, Mississippi.—The cotton crop is a failure beyond doubt. Two-ninths of a crop will approximate the result.

Washington county, Mississippi.—About one-fourth of the number of bales of cotton are now picked and ginned that were in former years at this date. I do not believe there will be near as great an effort made next year to raise a cotton crop—I mean a large crop—as there was this year, as many planters have not paid expenses.

Fayette county, Tennessee.—From the causes given I think the cotton crop will be cut short fully one-fourth of the estimate for August. Our county's average yearly yield has been 30,000 bales of 500 lbs., but from indications the present crop will not be over 6,000 bales.

Carroll parish, Louisiana.—The crop of cotton for this point in 1860 was near 90,000 bales; 9,000 will be more than will probably be made this year.

Ouachita parish, Louisiana.—The cotton in the parish on the alluvial lands was planted in the proportion of about three-forths of 1860, and from the unusually wet season and the worms the yield is now estimated at two-fifths of a bale of 400 lbs. to the acre. In the upland it will require about five acres to make 400 lbs. of lint.

Washington county, Texas.—The cotton crop is as fine in this county this season as ever was grown here, both as to quantity and quality. All that was planted early and kept well cultivated will far excel any ever grown here, but the late crop was injured badly by the worm. Most of the staple is extra.

Trinity county, Texas.—There was a large amount of cotton planted, of which there was considerable ruined by the flood and wet weather, which is unusual here. The farmers, however, went on planting again, and the cotton came on and did well until some time in September, when the worm commenced, reducing the crop about one-third, and now I suppose we will make what we call a half crop this year.

THE TERRITORIES.

Arizona.—Governor M'Cormick, formerly chief clerk of this department, and ever alive to the interests of agriculture, thus alludes to that interest in his message:

"The valleys of the Territory, more extensively cultivated this year than ever before, have produced an abundant harvest. The yield of corn, vegetables, and small grain is such as to prove that henceforth we need not look abroad for food; and I make no doubt that if assured that their crops will be bought and promptly paid for, and they are properly protected from Indian incursions, our ranchmen will, during the ensuing year, by the favor of Heaven, raise all the breadstuffs that may be required to subsist the military force in the Territory. Here in central Arizona, even in the mountain districts, where comparatively little was expected in the way of agricultural success, the pursuit of the husbandman is likely to be one of the most profitable. The heavy rains of the present season indicate that irrigation will seldom be necessary, and the fertility of the soil is remarkable. It seems as though everything planted attained the most luxuriant and complete growth in the shortest possible time. The grains, vegetables, and melons, taken promiscuously from any of the ranches, and raised without fertilization of any kind, or other than the simplest care, would command a premium if placed in competition with the products of the richest and most expensive farms and gardens of the Atlantic States."

Colorado.—It is stated that in this enterprising young Territory, during the past year, one hundred and thirty-six miles of irrigating ditches have been constructed at a cost of one hundred and thirty-six thousand dollars; and that in the land office the claims and entries for the first ten months in 1865 were one hundred and forty-one thousand acres. For the same time this year the entries and claims have been two hundred and fifty-one thousand acres. These lands could only be taken by pre-emption and homestead claims, and consequently the claims are made for actual settlement.

CONDITION OF THE CROPS.

The tables for November show the condition, compared with last year, of corn, sorghum, potatoes, peas, hay, beans, buckwheat, flax, cotton, sugar-cane, grapes, apples, pears.

The corn crop of the States, exclusive of eleven southern and the Pacific States, was estimated for 1865, in round numbers, at 704,000,000 bushels. The same States in 1866 yield an estimated product of 679,000,000, a decline of 25,000,000 bushels in quantity, a deficiency in quality equivalent to 75,000,000 more, making a difference in the feeding value of the crop, 100,000,000 bushels, between this and the previous year.

The South made a great effort for a good supply of this indispensable food for man and beast, and succeeded better than was expected. The data of the department, though not so full as to secure a close approximation, indicates a yield of 185,000,000 bushels in eleven States against 274,000,000 in 1859, a reduction amounting to 89,000,000 bushels.

The total amount of corn grown throughout the limits of the United States in 1866 is assumed to be about 880,000,000 bushels.

It is a singular fact that the wheat crop has declined in quantity for three years, not only in this country but in England, in about the same proportion;

and very nearly the same state of facts exists in France. The following is the estimated acreage and product of France:

Year.	Hectares sown.	Hectolitres obtained.
1861	6,754,227	75,116,287
1862	6,881,613	99,292,224
1863	6,918,768	116,781,794
1864	6,839,073	111,274,018
1865	6,891,440	95,431,028

The decline is thus expressed for the last three years: Per hectare, successively, 16.88, 16.15, and 13.85 hectolitres. The hectare is 2.471 of our acre, and the hectolitre 2.8375 bushels, equivalent, per acre, to 19.3, 19, and 15.9 bushels.

The report of the Commissioner of Agriculture to the President, for the current year, thus sums up the wheat estimates of the season: "The wheat crop of 1863 in the twenty-two States reported was very large; in 1864 the estimate was, in round numbers, 13,000,000 bushels less, or 160,000,000; in 1865, 148,000,000; and the present estimate is still further reduced to 143,000,000. Returns from the eleven southern States, so far as received, warrant an estimate of 17,000,000 for that section. Texas has produced a large crop; the other southern States less than half the average product. The crop of the Pacific States is very heavy, leaving a far greater surplus for export then the entire amount of the crop of 1860. From all the data received in the department the total amount of wheat produced in 1866 may be estimated at 180,000,000 bushels. The crop of 1859 was 173,000,000, and that of the present year, at the ratio of increase from 1850 to 1860, should have reached 242,000,000. The supply is about five bushels to each inhabitant, or half a bushel less than in 1859."

Sorghum has become an almost universal farm crop. In New England and the States of the northern border the climate is not favorable to its growth. The States of Maryland and Delaware have given increased attention to it the past year. Ohio, as seen in the table, shows a large yield; Indiana is credited with nearly an average; Kansas has a full average; while Illinois, Iowa and Missouri do not appear to have secured their last year's supply.

The estimate for potatoes, including all except the Pacific States, is 104,000,000 bushels. The crop of the seven southern States, not including sweet potatoes, is placed at 5,884,000 bushels. The estimate for twenty-two States in 1865 was 101,000,000. A slight falling off from last year's product is indicated. Maine, New Hampshire, West Virginia, Kentucky and Texas, considerably exceeded an average; the West failed generally to secure a full crop, and heavy losses from rot were sustained in some localities. It is evident that new and vigorous varieties are needed in the west. The northeastern States, after a period of deterioration and sweeping destruction, have obtained and disseminated prolific seedlings of excellent quality, and are reaping the results of the change of seed. This department, in its experiments with forty-three varieties of potatoes, found the Orono, Samaritan and Early Goodrich to be the most desirable varieties.

The hay crop is deficient; the estimate falls a little short of 21,000,000 tons, including the South. The figures for the last year exceeded 23,500,000, without the eleven southern States, which, however, make a difference of scarcely 1,000,000 tons. The quality has been very good.

The tobacco crop has been augmented by large products in the south; the estimate for Virginia is 95,000,000 pounds; Tennessee, 40,000,000; North Carolina, 30,000,000. The total estimate is 350,000,000 pounds, of which about half was grown in the States hitherto reported, of which Kentucky produces about 55,000,000 pounds.

The estimates of the cotton crop made in our October report, upon data of

September first, and subsequently modified by local losses, especially in Louisiana, have been fully sustained in most of the cotton States. From the data received in the department, the total estimate, including the little grown in States north of the cotton region proper, cannot be placed below 1,750,000 bales of 400 pounds each. As compared with outside estimates this inclines to lower rather than upper ranges of figures. Some cotton planters and commission merchants make the total 1,250,000 bales, of 500 pounds each, which is nearer the actual weight of New Orleans bales—a result scarcely less than that arrived at in this department. On the other hand, there are others who assume a total of 2,000,000 bales. Our estimates are not an average of a great many irresponsible guesses of individuals in several States, but the actual footing up of careful county estimates, after close scrutiny and cautious examination.

The following are the estimates for the States below mentioned:

	Bales.
North Carolina	91,000
South Carolina	102,000
Georgia	205,000
Florida	36,000
Alabama	220,000
Mississippi	270,000
Louisiana	109,000
Texas	300,000
Arkansas	182,000
Tennessee	148,000
	1,663,000
Other States	87,000
Total	1,750,000

Table showing the condition of the crops on the first day of November, 1866.

States.	CORN.		SORGHUM.		POTATOES.		TOBACCO.		PEAS.	
	Average amount of crop compared with 1865.	Quality of same.	Average amount of crop compared with 1865.	Quality of same.	Average amount of crop compared with 1865.	Quality of same.	Average amount of crop compared with 1865.	Quality of same.	Average amount of garden crop compared with 1865.	Average amount of field crop for forage compared with 1865.
Maine	9.6	9.3	.....	.....	11.4	9.2	8.	8.	10.3	10.5
New Hampshire	9.	8.2	.....	.....	11.6	10.3	.....	.....	10.	10.
Vermont	8.3	6.6	.....	.....	9.6	8.4	10.	8.	10.	9.
Massachusetts	10.	9.4	9.5	8.	11.	10.	9.	10.6	9.7	10.6
Rhode Island	8.2	9.	.....	.....	9.5	9.	7.	9.	11.	.....
Connecticut	9.8	10.	8.2	8.	9.5	9.3	9.6	10.	10.6	10.
New York	9.	7.5	9.6	8.3	10.3	8.5	8.3	9.	10.7	10.
New Jersey	9.8	9.5	10.5	9.2	9.8	9.6	9.	10.	10.	10.
Pennsylvania	10.1	9.	10.	9.6	13.	10.	9.	10.	10.3	10.
Delaware	11.	10.	13.	9.5	7.5	7.5	.....	.....	10.	10.
Maryland	10.5	10.	11.	10.3	11.	10.	10.	9.3	10.3	10.2
Virginia	8.	9.5	14.	10.	10.3	10.5	9.4	8.	9.3	7.5
North Carolina	7.2	9.	10.	9.8	10.	9.7	12.	9.	9.2	9.
South Carolina	4.	6.4	2.3	9.	7.	8.5	5.	10.	7.6	5.6.
Georgia	5.1	7.5	7.5	8.5	8.5	10.2	13.	9.2	8.	6.6
Florida	7.	9.2	.....	.....	8.2	9.	.....	.....	4.3	5.8
Alabama	6.5	7.4	7.8	9.6	8.6	10.	19.7	10.5	7.8	8.2
Mississippi	4.1	7.2	8.2	8.8	9.3	10.	10.4	9.2	5.3	5.5
Louisiana	2.5	6.4	4.	10.	7.	7.	15.	9.	5.5	2.2
Texas	12.3	10.5	15.3	12.	14.4	12.	13.	10.	11.7	12.
Arkansas	6.5	9.6	19.	11.	6.3	10.7	14.4	10.3	8.8	7.
Tennessee	9.	9.7	11.3	9.5	12.7	11.	10.6	8.	9.8	9.8
West Virginia	12.	10.3	11.6	10.3	12.4	9.	11.3	10.	10.5	10.1
Kentucky	11.4	10.4	10.6	9.8	12.8	11.4	11.4	10.5	10.	9.8
Missouri	9.	8.4	9.	9.	9.3	9.6	8.5	8.1	9.2	10.1
Illinois	8.8	7.6	7.8	9.	8.7	8.6	9.3	9.7	10.	10.
Indiana	11.	9.1	9.9	10.2	10.7	8.5	9.6	10.2	10.	10.
Ohio	10.6	8.8	11.1	10.1	10.3	7.5	9.8	10.2	10.4	10.1
Michigan	9.2	7.8	9.9	8.4	9.2	8.9	10.2	9.7	10.2	10.3
Wisconsin	7.	6.	6.9	7.2	8.	8.4	8.8	9.1	9.6	9.8
Minnesota	6.	4.8	6.4	5.9	8.3	9.	9.	7.5	9.1	9.5
Iowa	8.3	6.6	8.	7.9	8.2	8.7	9.3	9.3	10.1	9.7
Kansas	9.8	9.4	10.	9.7	8.8	10.2	10.1	9.7	10.5	10.2
Nebraska Territory	8.4	7.4	7.4	9.7	7.	8.1	12.2	9.	12.	10.
Utah Territory	11.	10.5	9.	9.4	11.7	10.2	10.	10.	11.	10.3
Colorado Territory	14.	9.	10.	10.	17.	14.	.....	.....	15.	15.

Table showing the condition of the crops, &c.—Continued.

States.	Average crop of hay compared with 1865.	Quality of same.	Average crop of beans compared with 1865.	Average crop of buckwheat compared with 1865.	Average crop of flax compared with 1865.	Average indicated crop of cotton compared with 1860.	Average indicated crop of sugar cane (not sorghum) compared with 1860.	Quantity of grapes compared with an average crop.	Quantity of apples compared with an average crop	Quantity of pears compared with an average crop.
Maine	7.1	9.7	10.	10.3	9.	.....	.....	9.	10.2	9.3
New Hampshire	8.4	10.	9.	10.2	10.	.....	.....	7.5	8.	6.6
Vermont	9.	9.6	9.	10.7	10.	.....	.....	8.	8.3	7.3
Massachusetts	8.8	10.	10.	11.6	.....	.....	.....	8.3	7.4	9.5
Rhode Island	8.	9.5	8.5	.....	.....	.....	.....	8.	5.2	10.2
Connecticut	9.	10.3	10.	11.6	10.5	.....	.....	7.4	7.	9.6
New York	9.	9.7	9.	11.7	9.6	.....	.....	7.3	6.7	7.
New Jersey	7.6	10.3	9.4	11.	8.5	.....	.....	8.2	9.	8.2
Pennsylvania	8.	10.5	9.4	13.5	10.	.....	.....	8.	8.	8.
Delaware	8.	10.	10.	11.	7.5	.....	.....	6.	10.	7.
Maryland	9.	9.7	10.	12.1	9.6	.....	.....	8.	9.	9.4
Virginia	6.5	9.	8.	12.	10.5	11.5	.....	8.4	5.4	5.
North Carolina	9.	10.	8.7	8.1	9.5	6.	10.	8.	7.7	7.1
South Carolina	8.	10.	7.	3.	.....	2.8	3.	4.5	5.1	3.5
Georgia	10.6	10.3	8.	9.5	10.	3.	9.	5.4	7.5	7.
Florida	10.	10.	.....	.....	.....	5.5	7.2	.....	.....	.....
Alabama	18.	10.3	8.	.....	12.	2.3	3.	5.2	9.8	8.1
Mississippi	8.5	10.	9.	10.	10.	2.¼	10.	6.8	8.1	7.
Louisiana	4.5	9.2	.....	.....	.....	1.4	2.	5.5	5.	2.5
Texas	13.4	13.	13.3	.....	.....	7.	11.5	12.	18.5	16.4
Arkansas	9.8	9.	5.2	10.	.....	5.	.....	9.	11.4	8.4
Tennessee	9.	10.	9.2	9.2	10.3	5.	.....	8.2	12.	10.5
West Virginia	8.8	9.2	10.3	12.8	11.	10.	.....	9.	3.9	4.6
Kentucky	9.1	9.3	10.1	10.7	9.7	9.8	.....	9.	6.7	6.5
Missouri	11.9	11.7	8.9	9.4	9.6	9.6	.....	9.	9.1	8.9
Illinois	9.	10.6	9.2	9.5	10.1	9.	.....	9.	10.2	9.6
Indiana	8.7	10.8	9.6	14.8	10.4	10.	.....	8.3	9.1	7.9
Ohio	9.1	10.5	10.1	12.8	10.6	.....	.....	7.9	10.1	8.2
Michigan	9.9	10.2	9.3	11.5	9.3	10.	.....	8.9	7.2	6.8
Wisconsin	10.	9.7	8.6	8.1	9.1	.....	.....	9.9	8.7	9.2
Minnesota	11.	10.2	9.	8.6	10.3	.....	.....	8.9	9.5	7.5
Iowa	11.	10.2	9.4	9.5	10.1	.....	.....	9.4	10.2	9.1
Kansas	10.4	10.6	9.3	8.4	10.2	7.2	.....	10.9	11.3	12.1
Nebraska Territory	9.7	10.7	8.7	10.5	14.	.....	.....	9.3	10.	10.
Utah Territory	12.2	10.3	10.	10.2	10.5	.....	.....	9.5	8.5	10.5
Colorado Territory	10.2	11.	12.4	10.5	.....	.....	.....	.....	.....	.....

METEOROLOGY.

OCTOBER, 1866.

Table showing the highest and lowest range of the thermometer, (with dates prefixed,) the mean temperature, and amount of rain, (in inches and tenths,) for October, 1866, at the following places, as given by the observers named. The daily observations were made at the hours of 7 o'clock a. m. and 2 and 9 p. m.

[Compiled in the Department of Agriculture from the reports made by observers for the Smithsonian Institution.]

Place.	County.	Observer's name.	Date.	Max.	Date.	Min.	Mean.	Rain.
MAINE.				°		°	°	*In.*
Steuben	Washington	J. D. Parker	8	70	29	26	44.5	2.00
Barnard	Piscataquis	Edwin Pitman	2, 8, 20	66	26	20	44.3	3.17
West Waterville	Kennebec	B. F. Wilbur	8	72	26	22	48.1	4.26
Gardiner	do	R. H. Gardiner	8	70	26	26	47.4	2.59
Lisbon	Androscoggin	Asa P. Moore						4.10
Webster	do	Almon Robinson	8, 20	70	26	24	45.7	
Rumford Point	Oxford	Waldo Pettingill	8, 21	70	26	18	46.1	2.65
Cornish	York	Silas West	8	76	5, 26	26	47.3	2.54
Cornishville	do	G. W. Guptill	8	74	26, 29	28	48.6	2.50
Averages							46.5	2.98
NEW HAMPSHIRE.								
Stratford	Coos	Branch Brown	21	72	26	20	43.1	3.97
Shelburne	do	F. Odell	8	75	26	21	46.8	
North Barnstead	Belknap	C. H. Pitman	8	75	31	28	50.3	2.94
Concord	Merrimack	John T. Wheeler	8	75	25	29	48.7	2.03
Claremont	Sullivan	Arthur Chase	8	75	6, 26	26	48.0	3.30
Do	do	S. O. Mead	21	78	26	24	47.3	
Averages							47.4	3.06
VERMONT.								
Lunenburg	Essex	H. A. Cutting	16	81	4	16	48.8	1.95
Craftsbury	Orleans	James A. Paddock	2, 21	72	25, 26	23	44.8	2.00
Randolph	Orange	Charles S. Paine	8	74	5, 6	21	46.7	2.34
Middlebury	Addison	H. A. Sheldon	21	70	6, 25, 26	30	48.5	2.30
Brandon	Rutland	H. Buckland	3, 8	80	25	26	50.1	2.48
Wilmington	Windham	Rev. J. B. Perry	20	73	25	20	46.3	
Averages							47.5	2.21
MASSACHUSETTS.								
Kingston	Plymouth	G. S. Newcomb	8	80	26	32	52.0	3.21

Table showing the range of the thermometer, &c., for October—Continued.

Place.	County.	Observer's name.	Date.	Max.	Date.	Min.	Mean.	Rain.
MASSACHUSETTS-C'd.				°		°	°	*In.*
Topsfield	Essex	S. A. Merriam	8	75	5,28	35	48.6	2.26
Lawrence	do	John Fallon	8	73	6	29	48.6	1.79
Georgetown	do	Henry M. Nelson	8	76	26	31	49.2	.....
Newbury	do	John H. Caldwell	8	75	25	30	48.9	.....
North Billerica	Middlesex	Rev. E. Nason	8	78	5,6	28	49.2	.....
New Bedford	Bristol	Samuel Rodman	8	75	26	30	51.5	2.52
Do	do	Edward T. Tucker	8	76	26	28	51.4	2.87
Worcester	Worcester	Joseph Draper, M.D.	8	73	26	32	51.0	2.37
Mendon	do	J. G. Metcalf, M. D.	2	72	5	29	49.6	2.90
Lunenburg	do	G. A. Cunningham	8,20	75	5	29	50.2	.....
Amherst	Hampshire	Miss S. C. Snell	8	73	5	27	49.5	3.38
Springfield	Hampden	J. Weatherhead	7,8	79	26	27	51.0	2.76
Williams College	do	Prof. A. Hopkins	21	74	6	28	45.7	2.37
Averages	Berkshire						49.7	2.65
RHODE ISLAND.								
Newport	Newport	Wm. H. Crandall	17	77	26	27	50.6	2.34
CONNECTICUT.								
Pomfret	Windham	Rev. D. Hunt	8	72	26	28	49.6	3.13
Columbia	Tolland	Wm. H. Yeomans	8,20,21	76	5	32	52.7	.....
Middletown	Middlesex	Prof. John Johnston	8	76	26	28	51.5	2.98
Colebrook	Litchfield	Charlotte Rockwell	20	74	25,26	28	49.5	.....
Groton	New London	Rev. E. Dewhurst	8	78	26	30	51.2	3.91
Averages							50.9	3.34
NEW YORK.								
Moriches	Suffolk	Mrs. C. Z. Hallock	8	83	6	39	57.4	4.14
South Hartford	Washington	G. M. Ingalsbe	21	79	5	27	52.2	1.07
Germantown	Columbia	Rev. S. W. Roe	1,20	78	5	32	52.6	3.50
Fishkill Landing	Dutchess	T. McDonough	8	73	5,6	33	52.5	3.03
Garrison's	Putnam	Thomas B. Arden	8	72	26	32	50.9	5.84
Throg's Neck	Westchester	Miss E. Morris	2,8	82	5	36	55.4	.....
Deaf & Dumb Inst.	New York	Prof. O. W. Morris	8,22	71	5	37	54.1	5.28
St. Xavier's College	do	Rev. Jno. M. Aubier	8	74	26	36	54.5	4.66
Columbia College	do	Prof. Chas. A. Joy	8	72	26	35	54.6	1.70
Flatbush	Kings	Eli T. Mack	1	81	26	34	57.0	3.49
Newburgh	Orange	Jas. H. Gardiner	1,8,20	74	26	36	54.8	2.19
Gouverneur	St. Lawrence	C. H. Russell	21	76	25	24	47.3	2.61
North Hammond	do	C. A. Wooster	8	75	5	24	49.2	4.14
South Trenton	Oneida	Storrs Barrows	20	74	5,6	22	49.0	2.76
Depauville	Jefferson	Henry Haas	19	74	25	30	50.0	3.44
Theresa	do	S. O. Gregory						3.01
Oswego	Oswego	Wm. S. Malcolm	21	74	26	33	51.4	3.77
Palermo	do	E. B. Bartlett	21	77	5	22	48.5	4.30
Baldwinsville	Onondaga	John Bowman	21,22	72	25	31	49.1	.....
Skaneateles	do	W. M. Beauchamp	8	71	5,25	26	47.9	.....
Nichols	Tioga	Robert Howell	8,20	78	6	29	50.2	.....
Geneva	Ontario	Rev. W. D. Wilson	20,21,22	78	5	30	54.7	1.83
Rochester	Monroe	M. M. Mathews, M.D.	21	76	5	31	52.0	1.22
Rochester Univ	do	Prof. C. Dewey	20	77	5	29	51.0	1.24

Table showing the range of the thermometer, &c., for October—Continued.

Place.	County.	Observer's name.	Date.	Max.	Date.	Min.	Mean.	Rain.
NEW YORK—Con'd.				°		°	°	*In.*
Little Genesee	Allegany	Daniel Edwards	21	77	5, 6	25	48.1	2.25
Buffalo	Erie	Wm. Ives	1	80	5	28	52.5	2.41
Averages							51.9	3.09
NEW JERSEY.								
Paterson	Passaic	Wm. Brooks	8	76	5, 6	33	55.1	5.35
Newark	Essex	W. A. Whitehead	8	74	6	33	54.2	3.97
Trenton	Mercer	E. R. Cook	22	72	26	38	57.1	4.63
Burlington	Burlington	John C. Deacon	21	74	26	32	54.8	4.50
Moorestown	....do	Thos. J. Beans	8	77	26	34	54.8	4.47
Mount Holly	....do	M. J. Rhees, M.D.	22	73	6, 26	35	55.2	.....
Seaville	Cape May	Barker Cole	8	86	5, 25, 26	36	54.6	6.90
Dover	Morris	Howard Shriver	8	75	26	36	56.5	.....
Haddonfield	Camden	Samuel Wood	8	76	26	34	54.6	2.87
Greenwich	Cumberland	R. C. Sheppard	8	73	26	36	55.6	3.92
Averages							55.3	4.58
PENNSYLVANIA.								
Nyces	Pike	John Grathwohl	20	79	5	18	49.4	2.40
Fallsington	Bucks	Ebenezer Hance	21	75	26	36	54.7	3.90
Philadelphia	Philadelphia	Pf. J. A. Kirkpatrick	8	75	5	38	56.8	3.54
Germantown	....do	Thomas Meehan	2	79	6, 26	33	54.6	.....
Mooreland	Montgomery	Anna Spencer	8, 21	73	26	32	53.7	4.55
Dyberry	Wayne	Theodore Day	8	78	5	20	47.9	.....
North Whitehall	Lehigh	Edward Kohler	8	74	6	25	53.1	.....
Parkesville	Chester	F. Darlington	8	75	6	34	54.5	2.80
Stevensville	Bradford	J. Russell Dutton	8, 21	79	5	22	50.1	2.19
Reading	Berks	J. Heyl Raser	1	73	5	34	54.3	.....
Ephrata	Lancaster	W. H. Spera	21	80	26	34	56.4	1.95
Mount Joy	....do	J. R. Hoffer	20	80	6	39	55.8	.....
Harrisburg	Dauphin	John Heisely, M. D	1	75	26	39	57.1	3.59
Lewisburg	Union	Prof. C. S. James	8	75	6	31	51.7	4.50
Tioga	Tioga	E. T. Bentley	8, 9	80	6	24	51.5	2.25
Pennsville	Clearfield	Elisha Fenton	2	77	5	24	48.7	4.08
Connellsville	Fayette	John Taylor	21	77	25	28	51.3	.....
New Castle	Lawrence	E. M. McConnell	1	75	5, 27	34	54.4	.....
Canonsburg	Washington	Rev. W. Smith, D. D.	8	82	25	28	51.9	4.06
Averages							53.0	3.32
MARYLAND.								
Woodlawn	Cecil	Jas. O. McCormick	8	80	31	36	56.2	4.65
Catonsville	Baltimore	Grape & Ranlett	1, 20, 21	68	5, 25	36	55.6	.....
Annapolis	Anne Arundel	Wm. R. Goodman	3, 8, 9, 22	74	31	40	58.1	8.41
Averages							56.6	6.53
VIRGINIA.								
Lynchburg	Bedford	Chas. T. Meriwether.	17	76	26	41	53.1	.....
WEST VIRGINIA.								
Romney	Hampshire	W. H. McDowell	7, 8, 19, 20, 21	82	31	30	.....	.....
NORTH CAROLINA.								
Statesville	Iredell	Thos. A. Allison	3	80	25	26	56.1	4.00

Table showing the range of the thermometer, &c., for October—Continued.

Place.	County.	Observer's name.	Date.	Max.	Date.	Min.	Mean.	Rain.
N. CAROLINA-Con'd.				°		°	°	*In.*
Wilson	Wilson	E. W. Adams, A. M.	3, 22	78	25, 26, 31	42	60.2	2.95
Oxford	Granville	J. H. Mills	2	71	24	42	56.5	.....
Raleigh	Wake	Rev. F. P. Brewer	3	79	25	35	56.6	5.06
Averages							57.4	3.67
FLORIDA.								
Gordon	Alachua	P. C. Garvin, M. D.	3	89	31	50	71.0	.....
Lake City	Columbia	Edward R. Ives	4	88	25	48	69.7	3.50
Averages							70.4	.....
TEXAS.								
Austin	Travis	J. Van Nostrand	10	87	22	47	69.2	0.38
Kaufman	Kaufman	James Brown	19	87	22	39	67.1	.....
Averages							68.2	.....
MISSISSIPPI.								
Natchez	Adams	William McCary	5	78	25, 31	44	65.2	2.00
Kingston	....do	J. Edwards Smith	20	81	31	46	65.2	.....
Averages							65.2	.....
ARKANSAS.								
Helena	Phillips	O. F. Russell	13, 19	78	31	33	60.0	4.69
TENNESSEE.								
Clarksville	Montgomery	Wm. M. Stewart	2, 20	78	25	32	58.1	2.24
Lookout Mountain	Hamilton	Edward F. Williams	1, 2, 3, 18	75	31	30	58.8	.....
Tusculum College	Green	S. S. & W. S. Doak	19	74	25	26	52.9	.....
Averages							56.0	.....
KENTUCKY.								
Louisville	Jefferson	Mrs. L. Young	20	85	25	28	57.9	1.72
Chilesburg	Fayette	S. D. Martin, M. D.	2, 20, 28	78	25	28	.....	2.88
Averages								2.30
OHIO.								
New Lisbon	Columbiana	J. F. Benner	2, 7	80	25, 27	32	51.7	2.20
Steubenville	Jefferson	Joseph B. Doyle	19	74	25, 31	36	53.5	.....
Milnersville	Guernsey	Rev. D. Thompson	20	76	31	26	49.4	2.40
East Cleveland	Cuyahoga	Mr. and Mrs. G. A. Hyde.	20	76	31	33	52.8	3.54
Gallipolis	Gallia	A. P. Rodgers	21	83	31	32	55.0	2.07
Kelley's Island	Erie	Geo. C. Huntington	8	75	31	38	56.2	1.84
Norwalk	Huron	Rev. A. Newton	2	78	31	32	52.7	2.27
Westerville	Franklin	Prof. H. A. Thompson	1	76	25	31	53.6	2.74
Kingston	Ross	Prof. John Haywood	1, 2, 8	78	25	32	54.1	1.88
Marion	Marion	H. A. True, M. D.	2	76	25	32	51.9	2.61
Kenton	Hardin	C. H. Smith	7	79	24, 30, 31	40	57.5	3.31
Urbana University	Champaign	M. G. Williams	2, 8, 20	75	25	29	53.7	2.41
Hillsborough	Highland	J. McD. Mathews	20	73	24	32	53.8	2.79
Bethel	Clermont	George W. Crane	2	82	25	28	50.5	2.38
Cincinnati	Hamilton	George W. Harper	2, 9	75	24, 27, 31	33	55.8	1.85
Do	....do	R. C. Phillips	2	79	24, 25, 27, 31	40	59.9	4.45
College Hill	....do	John W. Hammitt	2	80	25	32	54.8	.....
Farmer's School	....do	L. B. Tuckerman	20	74	26	32	54.7	2.63
Averages							53.9	2.59

Table showing the range of the thermometer, &c., for October—Continued.

Place.	County.	Observer's name.	Date.	Max.	Date.	Min.	Mean.	Rain.
MICHIGAN.				°		°	°	*In.*
Monroe City	Monroe	F. & E. Whelpley	2, 7, 8, 21	72	31	33	54.0	2.94
State Agricult'l Col	Ingham	Prof. R. C. Kedzie	2, 18	73	5, 31	32	49.5	3.57
Litchfield	Hillsdale	R. Bullard	2	77	24	28	49.0	7.87
Grand Rapids	Kent	E. S. Holmes, D.D.S.	1	76	31	30	50.4	.....
Northport	Leelanaw	Rev. Geo. N. Smith	1	78	31	28	49.7	.....
Holland	Ottawa	L. H. Streng	18	77	31	31	50.4	4.56
Ontonagon	Ontonagon	Edwin Ellis, M. D.	7	82	31	30	47.7	.....
Homestead	Benzie	George E. Steele	7	75	31	32	48.7	.....
Averages							49.9	4.74
INDIANA.								
Richmond	Wayne	John Valentine	2	74	25	28	52.8	2.54
Aurora	Dearborn	George Sutton, M. D.	2	81	25	26	.....	1.52
Vevay	Switzerland	Chas. G. Boerner	2	82	25	32	58.9	1.48
Muncie	Delaware	G. W. H. Kemper, M.D.	2, 7, 8	77	24, 31	32	53.6	3.03
Spiceland	Henry	William Dawson	2, 7	78	24, 25, 31	31	53.5	1.70
Columbia City	Whitley	Dr. F. and Miss L. McCoy.	1, 2, 7	76	25	30	52.1	.....
Indianapolis	Marion	Mrs. Z. Butterfield, A. M.	2	80	24, 25, 31	29	53.3	2.01
Merom	Sullivan	Thomas Holmes	2, 7	77	25, 31	32	56.0	2.74
New Harmony	Posey	John Chappellsmith	20	77	25, 31	35	56.7	0.98
Averages							54.6	2.00
ILLINOIS.								
Riley	McHenry	E. Babcock	7	75	31	22	49.8	2.72
Golconda	Pope	Wm. V. Eldredge	7	91	27	29	65.2	0.87
Aurora	Kane	A. & E. D. Spaulding	1	76	31	24	50.0	2.40
Sandwich	DeKalb	N. E. Ballou, M. D.	1, 6, 7	75	31	23	50.9	3.23
Ottawa	La Salle	Mrs. E. H. Merwin	7	80	31	26	52.9	2.16
Winnebago	Winnebago	J. W. & Miss Tolman	1	77	31	21	49.5	2.86
Rochelle	Ogle	Daniel Carey	4	86	31	22	52.0	.....
Wyanet	Bureau	E. S. & Miss Phelps	1	86	31	26	53.3	1.66
Tiskilwa	Bureau	Verry Aldrich	6	73	31	24	51.5	.....
Elmira	Stark	O. A. Blanchard	1	76	31	23	51.8	2.00
Peoria	Peoria	Frederick Brendel	1	75	31	29	54.6	2.87
Springfield	Sangamon	G. M. Brinkerhoff	2	82	31	34	55.2	.....
Loami	do	Timothy Dudley	8	78	31	25	53.6	4.50
Dubois	Washington	Wm. C. Spencer	6	80	31	24	50.7	3.35
Galesburg	Knox	Pf. W. Livingston	1	76	31	23	51.0	2.00
Manchester	Scott	Dr. J. & C. W. Grant	17	80	31	26	56.0	5.98
Mount Sterling	Brown	Rev. A. Duncan	1	77	31	26	55.9	.....
Augusta	Hancock	S. B. Mead, M. D.	1	74	31	27	56.0	3.83
Averages							53.3	2.89
WISCONSIN.								
Manitowoc	Manitowoc	Jacob Lüps	1	80	31	28	49.6	2.33
Plymouth	Sheboygan	G. Moeller	1	84	24	27	49.3	4.10
Milwaukee	Milwaukee	I. A. Lapham, LL.D	1	78	31	27	50.2	2.76
Do	do	Carl Winkler	1	78	31	28	51.3	3.39
Geneva	Walworth	Wm. H. Whiting	7	76	31	26	50.7	.....
Delavan	do	Leveus Eddy	1	76	31	24	49.5	2.05
Waupacca	Waupacca	H. C. Mead	1	83	31	25	50.3	.....
Embarrass	do	E. Everett Breed	1	84	24	24	48.9	3.17
Rocky Run	Columbia	W. W. Curtis	1	80	31	22	49.5	2.25

Table showing the range of the thermometer, &c., for October—Continued.

Place.	County.	Observer's name.	Date.	Max.	Date.	Min.	Mean.	Rain.
WISCONSIN—Cont'd.				°		°	°	*In.*
Beloit	Rock	H. D. Porter	1	75	31	23	49.9	1.41
Baraboo	Sauk	M. C. Waite	1	84	31	24	50.7	4.00
Averages							50.0	2.83
MINNESOTA.								
St. Paul	Ramsey	Rev. A. B. Paterson.	6	83	31	18	49.0	2.67
Minneapolis	Hennepin	Wm. Cheney	1	86	31	18	49.2	1.94
Sibley	Sibley	C.W. and C.E.Woodbury.	1	86	31	16	47.8	3.00
New Ulm	Brown	Charles Roos	1, 6	86	31	19	51.8	0.66
Averages							49.5	2.07
IOWA.								
Davenport	Scott	Sydney Smith	1, 18	75	31	26	52.3	1.78
Dubuque	Dubuque	Asa Horr, M. D	1	79	31	22	51.2	2.49
Monticello	Jones	M. M. Moulton	1	80	31	20	50.8	3.41
Fort Madison	Lee	D. McCready	1	76	31	21	53.1	2.51
Guttenburg	Clayton	Jas. P. Dickerson	1	84	31	18	48.8	.....
Ceres	....do	J. M. Hagensick	6, 12	78	31	20	51.2	.....
Manchester	Delaware	Allen Mead	1	82	31	17	47.7	2.49
Mount Vernon	Linn	Prof. A. Collins	1	80	31	20	51.5	.....
Iowa City	Johnson	Prof. T. S. Parvin	1	82	31	20	53.1	4.67
Independence	Buchanan	Mrs. D. B. Wheaton	1	82	31	18	51.4	2.70
Do	....do	D. S. Deering	1	76	31	21	50.3	.....
Waterloo	Black Hawk	T. Steed	1, 6	80	30, 31	28	53.0	.....
Iowa Falls	Hardin	N. Townsend	3	74	31	19	50.8	1.17
Des Moines	Polk	Rev. J. A. Nash	6	81	30, 31	26	51.5	0.50
Algona	Kossuth	Philip Dorweiler	1, 6	84	31	18	50.0	.....
Fontanelle	Adair	A. F. Bryant	1, 6	81	31	18	52.5	1.88
Harris Grove	Harrison	Jacob F. Stern	12	83	31	20	55.0	.....
Averages							51.4	2.36
MISSOURI.								
St. Louis	St. Louis	G. Engelmann, M.D	20	80	31	31	57.7	2.01
St. Louis University	....do	Rev.F.H.Stuntebeck	20	79	31	33	58.4	2.38
Allenton	....do	A. Fendler	2	78	31	23	52.8	2.92
Union	Franklin	Miss Belle Moore	2	80	31	27	55.7	2.40
Harrisonville	Cass	John Christian	1,2,7,10, 12, 13	80	31	26	57.2	7.78
Easton	Buchanan	P. B. Sibley	1, 5, 13	84	31	24	54.8	2.47
Averages							56.1	3.33
KANSAS.								
Leavenworth	Leavenworth	J. Stayman, M. D	5	83	31	19	53.8	1.55
Olatha	Johnson	W. Beckwith	2, 4, 5, 11	80	31	21	55.2	3.90
State Agr. College	Riley	Prof. B. F. Mudge	13	88	23, 31	30	57.8	0.43
Council Grove	Morris	Abner Woodworth	12, 13	86	31	28	56.4	2.53
Averages							55.8	2.10
NEBRASKA.								
Elkhorn	Washington	John S. Bowen	12	84	24, 30	24	54.1	.....
Bellevue	Sarpy	Rev. Wm. Hamilton.	1	80	31	23	48.2	0.34
Averages							51.2	.....
UTAH.								
Gt. Salt Lake City	Great Salt Lake	W. W. Phelps	2, 3	82	20	32	55.6	1.80

NOTES OF THE WEATHER—OCTOBER, 1866.

FROM THE SMITHSONIAN INSTITUTION.

Wolfville, Nova Scotia.—October 4.—First appearance of snow in the air. 31st.—Gale last night.

Lisbon, Maine.—The gale of the 30th commenced here at 3 p. m. of the 29th, with a light fall of hail and rain, and wind light from eastward, hauling to southeast and south. At 9 p. m. southeast fresh breezes and rain, increasing till 2 p. m. of the 30th, when the gale reached its height here, lasting till 4 p. m., and then moderating. It was the severest gale known here for many years. Ice on the 26th, 27th, 28th, and 29th.

Cornish, Maine.—October 30.—Very severe storm of wind and rain.

Williamsburg, Maine.—October 4.—Ground frozen half an inch. 27th, first snow of the season—depth one inch. 29th, two inches of snow fell.

West Waterville, Maine.—October 27.—Slight fall of snow and sleet last night. 29th, snow and sleet from 4 p. m. to 7 p. m., then rain till in night of the 30th. Very heavy storm; more water fell than in any one storm during the time of these observations—ten years.

Rumford Point, Maine.—Three inches of snow fell on the 27th, and two inches on the 29th.

Gardiner, Maine.—The storm of the 30th began at 3 p. m. on the 29th; height of the gale from 3 to 5 p. m. on the 30th.

Concord, New Hampshire.—The southerly storm raged with great violence for thirty hours, the wind blowing strongly from the southeast, and the clouds moving with remarkable rapidity. The Merrimack river rose above its banks, which has not occurred before in about two years.

Shelburne, New Hampshire.—Snow from 3 p. m. of the 26th to 9 a. m. of the 27th, the first that has fallen in the valleys.

Claremont, New Hampshire.—Ice formed one-fourth of an inch on the morning of the 5th, and half an inch on the 26th. Snow seen on Ascutney mountains on the 27th.

Stratford, New Hampshire.—The month was a very pleasant one; there was but little rain before the heavy storm of the 29th. Two inches of snow fell on the 27th.

Craftsbury, Vermont.—This has been the warmest October since 1854; October of last year was the coldest in the same period.

Wilmington, Vermont.—A very heavy storm occurred on the 29th and 30th, the rain much of the time falling in torrents. At 1 p. m. on the 30th the water was higher than known to be here for more than fifty years, and many bridges and fences were swept away.

Lunenburg, Vermont.—October was remarkably fair and warm, and really dry. Some bushes have leafed out the second time, and strawberries blossomed.

New Bedford, Massachusetts.—Trees were little changed till the frost of the 5th. At the end of the month grass lots were still green, and the feed unusually good for the season.

Mendon, Massachusetts.—October 30.—Streams lowest for the year so far.

Lunenburg, Massachusetts.—October 4.—First heavy frost last night.

Newport, Rhode Island.—October 26.—Ice this morning about a quarter of an inch thick. 30th.—High wind this morning, which increased to a gale from noon to 1 p. m., demolishing one hundred and fifty feet of the depot on Long wharf; very high tide; wind moderate at sunset.

Providence, Rhode Island.—The mean temperature of October (50.2°) was

two-tenths of a degree below the average of the month for thirty-five years. The amount of rain (2.78 inches) was fifty-seven hundredths of an inch below the average of thirty-five years. The warmest October in that period was in 1835, the coldest in 1836. A very heavy gale from the southeast commenced after midnight of the 29th and continued until about 2 p m of the 30th, with incessant rain. At 1 p. m. the tide in the river overflowed the wharves, covering several of the streets. It is believed that the tide has not been so high since the great gale of 1815.

Pomfret, Connecticut.—The first killing frost was on the night of the 4th.

Groton, Connecticut.—October 4.—Quite a frost this morning. 5th.—Water froze this morning.

Colebrook, Connecticut.—October 4.—Ground slightly frozen this morning.

North Hammond, New York.—October 4.—Heavy frost; snow flakes fell at intervals during the afternoon. 5th, very hard frost. 22d, at 11 a. m. wind blowing a violent gale. 26th, at 7.15 a. m. snow enough to whiten the ground.

Theresa, New York.—October 26.—Ground white with snow.

Palermo, New York.—October 4.—First black frost, killing vegetation generally. 17th and 18th, thunder in the northwest, on both days, between 10 a. m. and 1 p. m. 24th.—No rain since the 27th of September until to-day; wild geese passing southward. 31st, snow fell two inches in depth.

Nichols, New York.—October 5.—Temperature at 5½ a. m., 20°.

Rochester, New York.—October 5.—A very hard frost this morning, killing all tender vegetables, and forming ice an eighth of an inch thick. 31st, the mean temperature of the month was three degrees above the average of thirty years, and only four times in that period has the month been warmer. The warmest October was in 1839, the coldest in 1843.

New York, New York.—October 29.—Violent southeast wind p. m., and at 9.40 rain, which both continued till the 30th, at 9.35 a. m., when it ceased and was followed by a thick fog till 10.50, when it suddenly disappeared and the wind came west very light.

Buffalo, New York.—October 29.—Raining before daylight, continuing moderately all day and evening. 30th, raining from 4.30 p. m. to 5.30 p. m. 31st, scattering flakes of snow at 4.30 p. m.

Geneva, New York.—October was uncommonly warm, pleasant, and dry. The mean temperature was five degrees above the general average for the month, and the rain was nearly an inch and three-tenths less than the usual amount. From the 1st to the 24th of the month there was not a drop of rain, and until the 30th less than half an inch.

Little Genesee, New York.—October 25.—Roofs white with snow.

Trenton, New Jersey.—October 12.—Very strong wind all night, doing much damage to trees, old roofs, &c. 22d, light thunder-shower from the west, about 5.30 p. m.; much lightning, but little thunder. 26th, first ice, about as thick as writing paper.

Newark, New Jersey.—The mean temperature of October was higher by more than a degree than the average of the month for the last twenty-two years.

Mount Holly, New Jersey.—October 5.—First frost in the town this morning. 6th, very heavy hoar frost. 12th, faint flashes of lightning and distant thunder, from 10½ p. m. to midnight. Began to rain at 11 p. m., and rained heavily all night.

Moorestown, New Jersey.—October 22.—Thunder-shower from 5 to 6 p. m.

Byberry, Pennsylvania.—October 5.—Very hard frost last night; ice in some places; ground considerably frozen. 6th.—Very heavy white frost this morning; fields as white as snow.

Dyberry, Pennsylvania.—October was unusually clear and pleasant, with scarcely any rain before the 29th. Streams very low, and some wells and springs began to fail.

Reading, Pennsylvania.—October 4.—Heavy frost along the Schuylkill river. 5th.—Ice an eighth of an inch thick in buckets. 12th.—Rained most of the past night, and steadily the fore part of the day. Violent winds late in the afternoon and evening. Commenced clearing at 8.30 p. m., with strong gale from northeast. Rained again at night, and till 8.30 a. m. the 13th.

Stevensville, Pennsylvania.—October 24.—Snow-squall about 3 p. m., the first this season.

Tioga, Pennsylvania.—October 6.—Thermometer at 5 a. m., 22°; ice formed half an inch thick. 9th, diffuse lightning in the south at 9 p. m.

Philadelphia, Pennsylvania.—October 5.—First hoar frost observed. 6th, very heavy hoar frost. 11th to 13th, northeast storm; rain very heavy on the morning of the 13th. Very heavy and continuous rain from 8 p. m. on the 29th till 8 a. m. on the 30th.

Lewisburg, Pennsylvania.—Ice on the mornings of the 5th and 6th.

Grampian Hills, Pennsylvania.—There were two heavy in October, one on the 11th and 12th, the other on the 29th. No great storms of wind, nor thunder or lightning. No snow to show upon the ground until the morning of the 31st, and it then soon melted off.

Canonsburg, Pennsylvania.—October 31.—A light fall of snow.

Woodlawn, Maryland.—October 5.—Ice; ground frozen.

Wilkinsville, South Carolina.—October 10.—Rather heavy thunder in north, northwest, and west; heavy shower from 2.30 to 5.20 p. m. 15th, wild pigeons going westward. 22d, thunder shower from 4 to 4.30 p. m. 24th, light frost, the first observed; killed tender vegetation in low, damp places. 25th, white frost; all tender vegetation killed. 29th, general and violent rain from 1.30 a. m. to 4 p. m.

Lake City, Florida.—October 4.—Thunder in the south from 2 to 2.30 p. m. 29th, lightning in the east from 7 to 8 p. m.; and in the west, between 10.30 and 11.30 p. m. Rain recorded only on the 5th, 6th, and 29th.

Austin, Texas.—Rain only on the 15th, 17th, and 18th, and very light.

Helena, Arkansas.—Rain fell on five days in October; the heaviest were on the 21st, 2.48 inches, and on the 29th, 1.80 inch.

Clarksville, Tennessee.—October 23.—A very light white frost this morning. 24th, heavy white frost, killing all tender garden vines, the first killing frost of the season; a very thin skim of ice in exposed places. 25th, heavy white frost and skim ice an eighth of an inch thick.

Louisville, Kentucky.—The first visiblefrost was on the 22d of September; the first killing frost on the night of the 23d of October.

Chilesburg, Kentucky.—October 9.—Thunder-storm, with hail at 8 p. m.; it came from the southwest. White frost on the 23d, 24th, 25th, and 27th, the first here this season, though in low situations it appeared earlier. All tender vegetables were killed on the 24th, and on the 25th ice formed.

Norwalk, Ohio.—No frost during the month sufficient to kill vines.

College Hill, Ohio.—October 24 and 25.—Killing frost; ice formed on water in a bucket. 30th, ice on the borders of the pond.

Marion, Ohio.—October 5.—First frost of the season, but it did not destroy garden vegetables. 9th, thunder and lightning at every point, continuing for a great part of the day and following night. 21st.—The high wind, which in other places amounted to a hurricane, came on about 11 o'clock p. m. of the 20th, and continued high for four or five hours, dying away at 5 to 6 o'clock a. m. 25th, another frost, which did little injury to garden vegetables. 31st, a slight snow at about 4 a. m.

Urbana, Ohio—October 24.—A very few snow flakes yesterday at 6½ p. m., and to-day at 7 a. m. and 2 p. m. 25th, heavy white frost; ice, the first this autumn.

Kelley's island, Ohio.—October 31.—Coldest morning of the month; frost

reported in some localities back from the lake, none found near the lake; tomato vines as green as at any time during the season, fruit daily ripening.

New Lisbon, Ohio.—October 10.—Rain, thunder, and lightning last night. 24th, spits of snow; wild geese going south. 27th, hard frost; ice.

Toledo, Ohio.—October 6.—Hard frost in the morning. 9th, some severe showers in p. m., with thunder and lightning. 15th, 16th, 17th, severe frost each morning. 22d, rain 12½ a. m., with a gale of wind, which veered around to the west-southwest, and blew violently all day. 23d, 24th, and 31st, flurry of snow each day.

Litchfield, Michigan.—October 23.—Snow from 1.30 p. m. to 4 p. m., one inch in depth by side of building; first snow this season.

Kalamazoo, Michigan.—October 31.—Half an inch of snow this morning.

Holland, Michigan.—October 3 to 6, and 14 to 17.—Frost on each of these mornings. Snow fell on the 23d, 24th, 25th, 26th, 30th, and 31st.

Northport, Michigan.—October 31.—Snow fell two inches deep last night, lying that deep at 7 a. m. this morning.

Grand Rapids, Michigan.—October 22.—Rain fell in torrents last night, and the wind blew a strong gale, part of the time a violent gale. 24th, heavy frost this morning, the first to kill vegetables in the garden of the observer.

Columbia City, Indiana.—October 22.—A severe storm passed over the town last night, beginning at 10 p. m. and ending at 5 a. m. this morning. It was at its height at from midnight to 1 a. m.

Muncie, Indiana.—The wind during the night of the 21st was quite high, but no serious damage was done.

Vevay, Indiana.—October 21.—A violent gale from the southwest, approaching to a hurricane, passed over this place at night. It reached its maximum at 11.30 p. m., after which it decreased in violence, and quieted down to a fresh breeze at 4 a. m. of the 22d. A heavy shower of rain fell during the storm. 25th, ice an eighth of an inch thick on a basin of water this morning.

Merom, Indiana.—October 21.—After raining nearly all day, accompanied occasionally with gusts of wind from southwest, at precisely 7 o'clock a fearful storm, accompanied by lightning and thunder, burst suddenly from the southwest. Large forest trees and fruit trees were blown down, and houses were unroofed.

Spiceland, Indiana.—October 23.—Sweet potato and tomato vines are still green; no effects of frost. A few very light flakes of snow fell this evening. 25th, first killing frost. 30th, a few light flakes of snow between 3½ and 4 p. m.

Aurora, Illinois.—October 31.—The leaves remain quite green on apple, pear, and cherry trees.

Augusta, Illinois.—October 20.—Shower, with thunder and sharp lightning, from 9½ to 10 p. m., then turned to a settled rain. 21st, shower, with heavy thunder and sharp lightning, at 4.45 p. m. The lightning struck in several places. 22d, light white frost this morning on boards in low places. 23d, ice formed on still shallow water; first hard frost.

Golconda, Illinois.—October 21.—Heavy gust of wind at 8 p. m. 28th.—At about 8 p. m. the wind was blowing gently from the southeast; it had been raining up to 7, when it cleared off. At 8½ a black cloud suddenly came up from northwest, and at 9 p. m. for about ten seconds the wind blew almost a hurricane. It blew down and moved several houses, but was so quickly over that not much damage was done. It was accompanied with heavy rain, and in fifteen minutes all was clear again.

Sandwich, Illinois.—October 8.—Wild geese in large numbers going north.

Mount Sterling, Illinois.—October 25.—A slight thunder storm from the west. 22d and 23d, a severe thunder storm on each day from the south from 4½ p. m. to 6½ p. m. 24th and 25th, ice formed in many places. 28th, 29th, 30th, large flocks of wild geese, flying high, passing from northeast to south-

west. As late as 9 p. m. they were heard high in the air. 31st, ground generally froze on the surface last night.

Ottawa, Illinois.—October 9.—Wild geese flying south. 18th, 19th, wild geese flying east. 21st, rain and high wind; no damage done at this station. 22d, wild geese very much disturbed, and flying east in large numbers. 23d, first snow; it did not cover the ground. 24th, first ice, a sixteenth of an inch thick. 30th, wild geese flying east.

Union, Missouri.—October 21.—At 4 p. m. a hard storm of rain from the west; for five minutes the wind blew a strong gale. 31st, first frost to mark tender vegetation.

Allenton, Missouri.—October 21.—At 8.20 a. m. thunder at a distance; 3.45 to 3.55 p. m. thunder and lightning, with a gale from the south, changing to a southwest and then to a northwest gale by 6 p. m. 28th, faint thunder and lightning from 6 to 6.15 a. m.

St. Louis, Missouri.—October 21.—At 4½ p. m. a furious gale from the west or west-southwest followed quite suddenly the southeast wind, with rain, thunder and lightning, and some hailstones. It lasted only eight or nine minutes, but was most destructive during that time in a southwestern and northeastern line, from Lafayette Park to the Polytechnic Institute. (The observers at St. Louis give details with regard to this storm.)

Plymouth, Wisconsin.—October 23.—First snow; one inch deep in the forenoon.

Milwaukee, Wisconsin.—October 21.—Barometer lowest at 11 p. m., 28.571 inches, reduced to 32 degrees; wind changed at 11¼ p. m. 23d, first snow.

Baraboo, Wisconsin.—October 16.—Thin ice early this morning. Snow on the 22d, 24th, and 27th. Ground frozen on the 31st.

Embarrass, Wisconsin.—October 2 to 6.—Wild geese going south. 20th, wild geese and ducks flying south in large flocks.

St. Paul, Minnesota.—The mean temperature of the month was higher than that of any other October in the eight years during which this record has been kept, and the amount of rain was greater than in other Octobers in the same period, except in 1860 and 1861.

New Ulm, Minnesota.—October 23.—Ice an eighth of an inch thick. 27th, very good sleighing in the forenoon, but by 2 p. m. rain set in and destroyed it.

Dubuque, Iowa.—October 31.—Ice and abundant white frost in the morning, the first frost which has been sufficient to kill tender foliage in the vicinity of the Mississippi river.

Monticello, Iowa.—October 5.—Large flock of wild geese flying south. 27th, first snow-storm, commencing at 1 a. m. and ending at 4 a. m.; fell one inch; began raining at 10 a. m., and the snow was all gone by noon.

Waterloo, Iowa.—October 27.—About two inches of snow fell last night, but it all melted away during the day.

Ceres, Iowa.—October 25.—First snow; it began at 1 a. m., and fell three inches deep. 27th, ice half an inch thick. 31st, ice on still water an inch thick.

Leavenworth, Kansas.—The mean temperature of October was 1.8 degree below the average of five years, and the amount of rain was 2.05 inches less than the average for the same period.

Council Grove, Kansas.—October 19.—White frost, and skim of ice in a bucket of water. 20th, a storm of wind and rain, almost a hurricane. 22d, ice on standing shallow water.

Elkhorn City, Nebraska.—The month was the warmest and probably the most windy of the past eight years. The frosts have been very light for the season, the ground only twice slightly frozen on the surface and but three days, upon which moisture fell; once a thin and almost imperceptible snow.

Great Salt Lake City, Utah.—October 14.—Snow. 19th.—Four inches of snow fell in the night.